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Abstract

The occurrence of ice accretion within commercial high bypass aircraft turbine engines has been reported under certain atmospheric conditions. Engine anomalies have taken place at high altitudes that were attributed to ice crystal ingestion, partially melting, and ice accretion on the compression system components. The result was one or more of the following anomalies: degraded engine performance, engine roll back, compressor surge and stall, and flameout of the combustor. The main focus of this research is the development of a computational tool that can estimate whether there is a risk of ice accretion by tracking key parameters through the compression system blade rows at all engine operating points within the flight trajectory. The tool has an engine system thermodynamic cycle code, coupled with a compressor flow analysis code, and an ice particle melt code that has the capability of determining the rate of sublimation, melting, and evaporation through the compressor blade rows. Assumptions are made to predict the complex physics involved in engine icing. Specifically, the code does not directly estimate ice accretion and does not have models for particle breakup or erosion. Two key parameters have been suggested as conditions that must be met at the same location for ice accretion to occur: the local wet-bulb temperature to be near freezing or below and the local melt ratio must be above 10%. These parameters were deduced from analyzing laboratory icing test data and are the criteria used to predict the possibility of ice accretion within an engine including the specific blade row where it could occur. Once the possibility of accretion is determined from these parameters, the degree of blockage due to ice accretion on the local stator vane can be estimated from an empirical model of ice growth rate and time spent at that operating point in the flight trajectory. The computational tool can be used to assess specific turbine engines to their susceptibility to ice accretion in an ice crystal environment.

Nomenclature

A = Area, ft^2

c_{p_w}, c_{p_a} = Specific heat of water vapor, air, BTU/(lb_m-R)

$c_{p_{wet}}$ = Specific heat air-water vapor mix, BTU/(lb_m-R)

c_{p_i} = Specific heat of ice, BTU/(lb_m-R)

C = Blade chord, in

C_U = Tangential velocity of air, ft/s

D_v = Diffusion coeff. of water vapor into air

d = Ice particle size, diameter, μm

F_w, F_a = Molar flow rates of water vapor, air, mole/s

G = Ice growth rate, in/s

g_c = Unit conversion, 32.2 lb_m-ft/(lbf-sec^2)

h_m = Mass transfer coefficient, ft/hr

h = Convective heat transfer coefficient, BTU/(hr-ft^2-R)

ΔH_{melt} = Enthalpy change of ice and air

IWC = Ice water content, kg/m^3

J = Units conversion, 778.28 ft-lb_f / BTU

k = Thermal conductivity, BTU/(hr-ft-R)

L_v = Latent heat of evaporation, BTU/lb_m

Le = Lewis Number

L_f = Latent heat of freezing, BTU/lb_m

L_s = Latent heat of sublimation, BTU/lb_m

LWC = Liquid Water Content, kg/m^3

M_a,M_w = Molecular weight of air, water vapor

M_{wet} = Molecular weight of air-water mixture

$\dot{m}_w$ = Evaporation rate of water, lb_m/hr

N = Compressor rotational speed (RPM)

n_{melt} = Melt fraction

Nu = Nusselt number

P_a, P_w = Partial pressure of air, water vapor, psia

$P_{w,s}$, $P_{w,\infty}$ = Partial pressure of water vapor at surface, and in free stream, psia

P_{SAT} = Saturation pressure, psia

Pr = Prandtl number

$\dot{q}$ = Heat flux, BTU/(sec-in^2)

r_2 = Blade tip radius, in

r_C = Arc radius of blade at mid-chord, in

R = Gas constant, ft-lb_f/(lb_m-R)

$\Re$ = Universal Gas constant, 1545.5 ft-lb_f/(lb-mole-R)

Re = Reynolds number

R_{wet} = Gas constant of air-water vapor mixture, ft-lb_f/(lb_m-R)

S = Blade spacing, baseline, in

S' = Reduced blade spacing, in

Sc = Schmidt number

Sh = Sherwood Number

T_s = Surface temperature, R

T_{Stat} = Static air temperature, R

T_{Tot} = Total air temperature, R

T_{WB} = Wet-bulb temperature; surface, R

T_∞ = Free-stream temperature, R

T_M = Averaged temperature of control volume, R

TWC = Total water content = $LWC + IWC$

t = Time, s

U = Rotor peripheral velocity, ft/s

V_d = Ice particle velocity, ft/s

V_∞ = Free-stream air velocity, ft/s

$\tilde{V}$ = Control volume

W_w, W_a = Flow rates of water vapor and air, lb_m/s

w_a,w_w = Mass fraction of air, water vapor

w_∞,w_s = Mass fraction of water vapor in dry air in the free-stream, and at the surface

X, = Axial gap between rotor and stator, in

X_0, Y_0 = Blade circular arc center point x, y

X_2, Y_2 = Blade trailing edge coordinate, in

x_0, x = Initial location ice particle, current location of ice particle, in

Y_1 = Blade leading edge y coordinate, in

Z = Axial distance, in

Greek:

α = Thermal diffusivity, ft^2/s

β_1, β_2 = Angles, leading; trailing edge, degrees

γ_{wet} = Ratio of specific heats of air-water mix

θ = Blade arc angle, degrees

μ = Viscosity of air, absolute, lb_m/(ft-s)

τ = Thermal response time, s

ϕ = Relative humidity

ρ_i,ρ_w,ρ_a, = Density of ice, water vapor, air, lb_m/ft^3

σ = Blade tip solidity

χ_a, χ_w = Mole fraction of air, water vapor

ω = Specific humidity

I. Introduction

The purpose of this study is to document the development of a computational tool to estimate the risk of ice accretion and its effect on turbofan engine performance. Ice crystals ingested into the engines during the operation of an aircraft at high altitudes in high ice water content (HIWC) environments can result in ice accretion in the low pressure compression system. As ice crystals are ingested into the fan and low pressure compression system, the air temperature increases and a portion of the ice crystals melt. This allows the ice-water mixture to stick to the metal surfaces of the compressor components. The resulting accretion causes a blockage on stationary components such as the stator vanes, and subsequently results in the deterioration in performance of the compressor and engine. There have been numerous reported engine icing events[1, 2] that have occurred on commercial airlines (Figure 1). The total number of engine icing events per year, that were attributed to high ice water clouds, appear to be increasing since 2002[3].

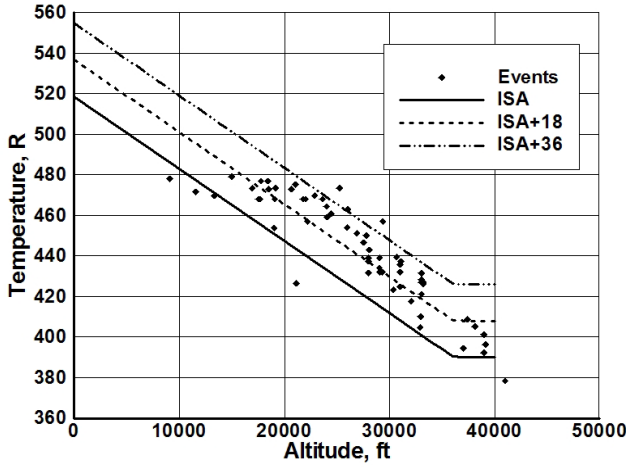


Figure 1: Reported engine icing events. *The engine events occurred at altitudes between 10K and 40K feet and at temperatures between ISA and +36 R).*

The computational tool that was developed in this study provides the capability to analyze a turbine engine through an ice cloud along a vehicle flight trajectory from takeoff, climb, cruise, and descent modes, and to evaluate the susceptibility of the engine to ice accretion. The tool has an engine system thermodynamic cycle code, coupled with a compressor flow analysis code, a fluid properties code, and an ice particle melt code. The mixed fidelity computational tool provides details of the flow conditions within each blade row of the fan and low pressure compression system during operation in the engine system environment. This work leverages from the previous code development effort and parametric study of the effects of blockage due to ice on engine and compressor performance reported in References 4, 5.

Ice accretion in the low pressure compression system can result in deteriorating the performance of the compressor, and consequently on the overall performance of the engine. In this study we utilize a representative notional engine in the 40K lb_f thrust class and a typical flight trajectory that is appropriate for a commercial aircraft equipped with this class of engine.

In order to perform the study, it was necessary to have the details of the low pressure compressor (LPC) geometry to compute the flow conditions between each blade row with the mean line compressor flow analysis code. To that end, a conceptual design of a notional fan-core and LPC was completed to determine the key dimensions that define the blade and flow path. Details of the LPC design are provided in the appendix of this paper. The engine system analysis was performed by the Numerical Propulsion System Simulation (NPSS) code[6]. This code has been coupled with a mean line compressor analysis code (COMDES[7]) such that blade row flow details of the LPC can be extracted. The baseline engine performance was computed with the NPSS-COMDES code, across the complete flight trajectory. The locations within the LPC where there is a risk of ice accretion were determined. At those operating points and locations within the LPC, a parametric analysis with additional blockage due to ice accretion could be performed, as was demonstrated in References 4, 5. These previous parametric analyses completed in

References 4, 5 predicted that as the amount of blockage is increased, the LPC pressure ratio, choke margin, efficiency, and stall margin are reduced. All of these have a net detrimental effect on engine performance that can potentially cause an increase in turbine inlet temperature for a given thrust setting, or a reduced level of thrust, or rollback, for a given maximum turbine temperature. Additionally both of these possible scenarios result in an increase in the specific fuel consumption.

II. Code Enhancements

The computational tool that has been developed for this study leverages from the coupled Numerical Propulsion System Simulation engine thermodynamic cycle code and the mean line compressor flow analysis code (COMDES). A fluid properties model has been added to the COMDES code to account for supplemental water vapor in the air. Additionally, a code named MELT has been developed to model the melting of ice particles. This code leverages capabilities from the LEWICE2D code[8, 9]. Modifications to account for water and ice crystals in the airflow have been made to the compressor code. These codes have been coupled together such that they exchange boundary conditions at each iteration. The compressor analysis code computes the detailed blade row by blade row flow conditions, as well as the overall compressor performance, thus the code is utilized by the system modeling code directly, and takes the place of a characteristic performance map. The mean line compressor code effectively eliminates the need for a map in the NPSS engine system modeling code for the fan-core and LPC components. A code named MELT has been developed that computes the melting rate of ice crystals, as they pass through the engine inlet, fan and low pressure compressor blade rows. The models for sublimation, melting, and evaporation in the MELT code have been adapted from the LEWICE2D code. However, there are no models for ice accretion, particle breakup, shedding, or erosion in MELT. The compressor code and MELT have been coupled to exchange boundary conditions at the blade leading and trailing edges. The compressor code has several additional capabilities, including the ability to calculate the effects of water vapor on the fluid properties of the air–water vapor mixture based on the mole fraction of air to water vapor. The specific humidity at the engine inlet is obtained from the NPSS code, and the local relative humidity is estimated through each component of the inlet-fan-LPC, taking the sublimation, melting, and evaporation into consideration, as well as the local air temperature. The resulting effect of the humid air on the performance of the compressor is computed.

A. Numerical Propulsion System Simulation (NPSS)

NPSS[6] is an advanced thermodynamic cycle code written in an object-oriented language for system modeling of gas turbine engines. The code provides the overall component-level performance and flow conditions of pressures and temperatures. However, the NPSS system modeling code alone does not have the fidelity to provide the flow conditions within the stages and blade rows. Therefore COMDES[7], a mean line compressor flow code, was coupled to NPSS to provide the flow conditions at a higher fidelity, that is, within each blade row of the multi-stage fan-core and low pressure compressor. The block diagram in Figure 2 illustrates the turbofan engine model and its components as modeled with the NPSS-COMDES codes.

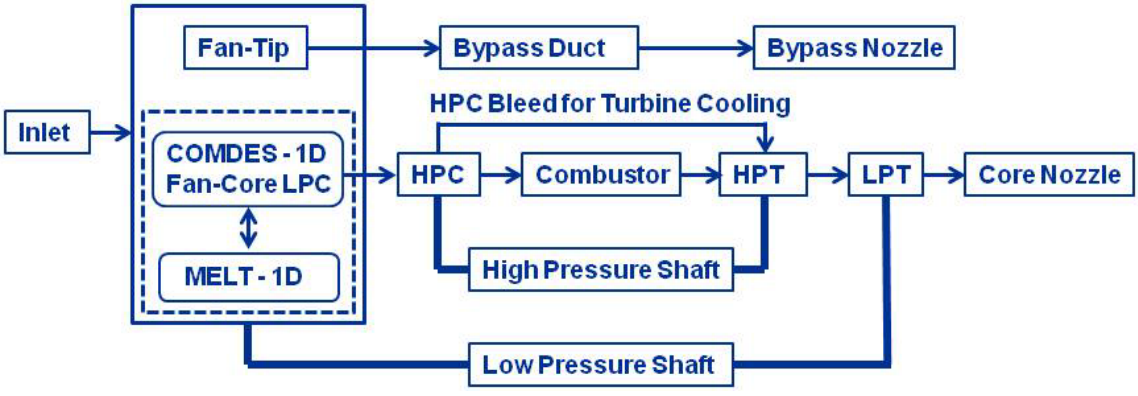


Figure 2: The NPSS engine system model of the two spool turbofan engine with the coupled COMDES compressor flow analysis code and MELT ice melting models. *The fan-core performance (dashed box) is computed with the COMDES mean line flow code and the MELT code.*

The COMDES and the NPSS codes were coupled such that they exchange boundary conditions iteratively at each operating point through the flight trajectory. The fan-core and LPC performance illustrated in Figure 2 with the dashed box is not obtained from component characteristic maps, but rather is calculated with the COMDES mean line flow analysis code, and the MELT code. This process is illustrated in more detail in Figure 3, where the codes and their functionalities that have been developed for this study are described in more detail. The codes are outlined with the rectangular shaped border, while the boundary condition information passed between the codes have borders with rounded corners.

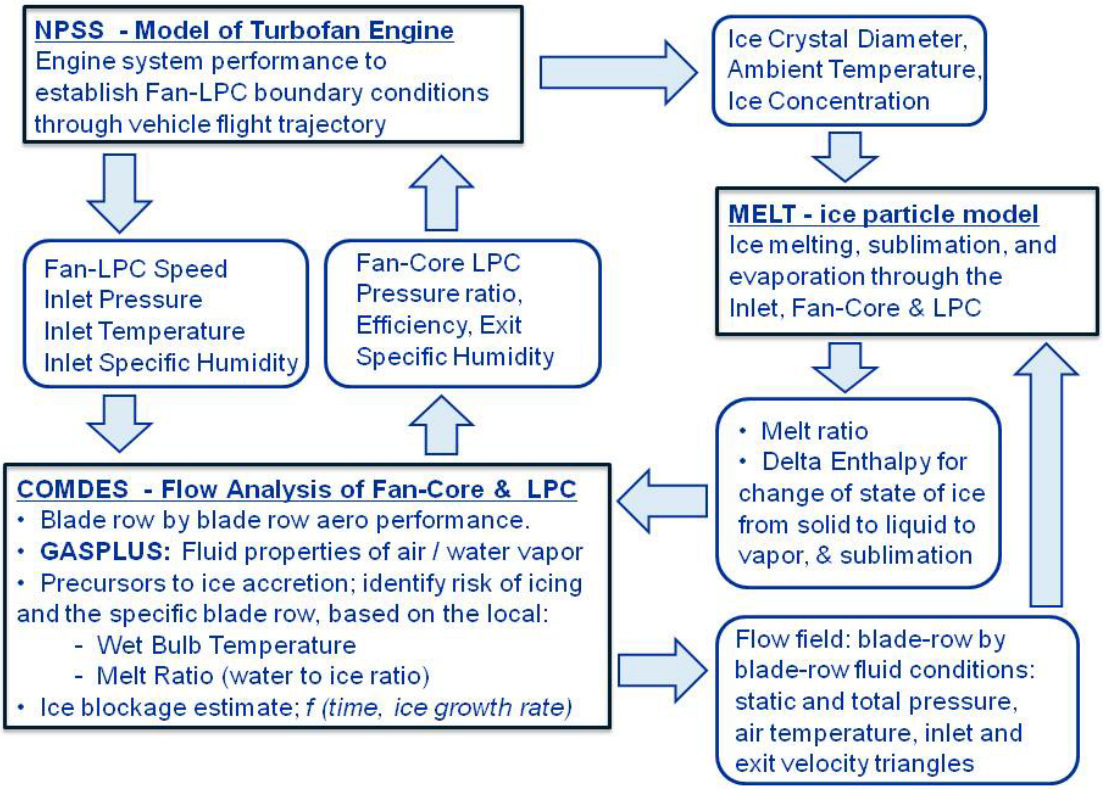


Figure 3: The NPSS engine system model, COMDES compressor flow model and MELT ice melting computer model boundary exchange strategy for the fan-core and LPC. *The fan-core and LPC performance is computed with the COMDES code, and the MELT code.*

While the fan-core and LPC performance is evaluated by means of the results from the COMDES code, the rest of the turbine engine components are modeled in NPSS with the use of traditional component characteristic performance maps. With this combined engine-compressor performance modeling tool, the detailed blade row conditions are determined while operating in an engine system environment. The notional engine is analyzed though the notional flight trajectory of a commercial carrier to determine the flow conditions, including the local pressure and temperature between each rotor and stator blade row of the multistage low pressure compressor (LPC).

Based on preliminary experimental results of ice accretion on a wedge shaped airfoil performed jointly by NASA and the National Research Council of Canada (NRCC)[10], well-adhered ice accretions with rapid growth were observed to occur when the wet-bulb temperature was near freezing or below. Another key parameter was to have sufficient liquid water which is characterized in this study using the melt ratio, or the local value of the liquid water to the total water ratio (ice + water). For icing to occur, this study utilized a melt ratio of 10% based on observations that were made from the analysis of laboratory test data[10]. As a side note, the experiments conducted by NASA and NRCC showed that ice accretion could also occur at wet-bulb temperatures above freezing, particularly at higher ice water concentrations. However, this ice did not appear to be well-adhered and had a tendency to shed periodically. This shedding can also pose a hazard in the engine but is not considered in this study.

The critical values of wet-bulb temperature and the melt ratio are the two key parameters that together are the necessary conditions which must be met simultaneously, at the same calculating station in the compressor, in order for there to be a high risk of ice accretion. Since the wet-bulb temperature and the melt ratio both change through each blade row, this technique also identifies the blade row where there is a high risk of ice accretion. However, it is recognized that other parameters such as the heat transfer rate through the blades may need to be considered as well, but are not included in the current version of the NPSS-COMDES codes. It is assumed in this study that accretion does not occur on the rotors, since the water/ice mixture would likely not have enough time to accrete on the high speed blade surface due to high centrifugal forces. Therefore the assumption is that accretion can only occur on the stator vanes and flow path walls.

Once a stator has been located in which the two parameters simultaneously indicate a risk of ice accretion, the amount of blockage at that stator vane location can be estimated as a function of time spent at that operating condition, and the measured ice accretion growth rate obtained from laboratory experiments[10]. The growth rate in terms of inches per second is converted to a value of additional blockage at that stator location, and the performance of the compressor with the additional blockage can then be computed with the compressor flow analysis code as a function of time spent at that operating condition. Parametric blockage is not addressed in this study, but was detailed in previous studies[4, 5]. The updated performance of the iced compressor is then passed to the engine cycle code, and the engine performance with the iced compressor is aero-thermodynamically rebalanced.

B. Compressor Flow Analysis Code Enhancements

The compressor flow analysis code utilized in this study is the COMDES mean line flow code. The code computes the velocity, pressure, temperature, and flow angles at the leading edge and trailing edge of each blade row, at the hub, mean, and tip sections. The mean line compressor design and flow analysis code has been modified to include the effects of relative humidity on the fluid properties of air and water vapor mixture, and the subsequent effects on compressor performance. The capability of calculating the local relative humidity in each blade row is based on the initial value of specific humidity (mass of water/mass of air) at the compressor inlet. Additional modifications have been made to enable calculating the two key parameters which have been identified as early indicators of ice accretion: the local wet-bulb temperature and the percent of melt ratio within each blade row. If the limiting values of these key parameters are met, there is a risk that ice will accrete on the surfaces of the compressor. With these parameters as the precursors to ice accretion, the blade row within the compression system can be identified that is likely to experience ice buildup at a particular engine operating condition in the vehicle flight trajectory. The local wet-bulb temperature is calculated at each blade row. The geometry section of the code was improved with the addition of simple circular arc blades and vanes. An ice particle melting and evaporation model was coupled to the compressor code to compute the local melt ratio through each blade row.

Water Vapor

Additional modification to the COMDES code includes the capability of modeling the effects of water vapor on the gas properties of air. The model is based on a specified value of specific humidity at the inlet of the engine/compressor. The values for fluid properties of the water vapor and air are obtained in COMDES from the GASPLUS[11] code. The mole fraction of water vapor to air is used to compute the average mole weight of the fluid, the average gas constant, and the average specific heat ratios for water vapor (c_{p_w}) and air (c_{p_a}). Molar flow rates (F_w, F_a) are given by:

$$F_w = \frac{W_w}{M_w} \tag{1}$$

$$F_a = \frac{W_a}{M_a} \tag{2}$$

Mole fractions (χ_w, χ_a) are given by:

$$\chi_w = \frac{F_w}{\left(F_w + F_a\right)} \tag{3}$$

$$\chi_a = 1 - \chi_w = \frac{F_a}{\left(F_w + F_a\right)} \tag{4}$$

Mass fractions (w_w, w_a) are given by:

$$w_w = 1 - w_a = \frac{\chi_w M_w}{\chi_a M_a + \chi_w M_w} \tag{5}$$

$$w_a = \frac{\chi_a M_a}{\chi_a M_a + \chi_w M_w} \tag{6}$$

Average molar mass of the mixture:

$$M_{wet} = \chi_a M_a + \chi_w M_w \tag{7}$$

The specific heat of the air-water vapor mixture ($c_{p\,wet}$) is calculated with the following formula:

$$c_{p\,wet} = w_a \; c_{p\,a} \; + w_w \; c_{p\,w} \tag{8}$$

Average gas constant (R_{wet}) of the air-water vapor mixture, in terms of the universal gas constant ($\Re$):

$$R_{wet} = \frac{\Re}{(\chi_a M_a \; + \chi_w M_w \;)} = \frac{\Re}{M_{wet}} \tag{9}$$

The ratio of specific heats for the air-water vapor mixture:

$$\gamma_{wet} = \frac{1}{(1 - R_{wet}/(J \;\; c_{p\,wet}))} \tag{10}$$

Rotor and Stator Blade Geometry

The geometry portion of the compressor code has been improved with the addition of a circular arc blade geometry generator. The code generates rotor blades and stator vanes based on the values of the blade angles at the leading and training edges, the tip solidity, and the flow path radii. The circular arc shaped mean camber lines of the blades are created at the hub, mean, and tip section of each rotor and stator of the stage. When used in the analysis mode, the circular arc blades act as reasonable approximations of the actual rotors and stators, Figure 4. This represents one stage of the five stage fan-core and LPC that are analyzed in this study, as will be illustrated in a later figure. With this method, the blade-to-blade distances and passage chord lengths can be computed with reasonable accuracy.

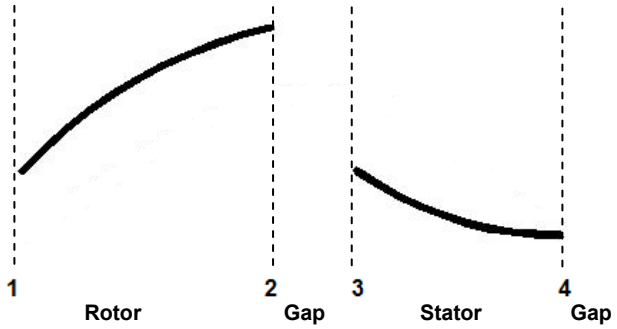


Figure 4: Rotor and stator blade mean camber line chords at the mid-span section for a typical stage. *The station numbers 1 and 2 refer to the rotor leading and training edges respectively, while stations 3 and 4 refer to the stator leading and trailing edges respectively.*

The lengths are used to estimate ice particle residence time and for calculating the sublimation, melt, and evaporation rates which will be addressed in the subsequent "Ice Particle Melting and Evaporation" section. The circular arc blade generation methodology that was used to determine the compressor rotor and stator blade dimensions are detailed below and the compressor geometry used in this study is provided in a later section on fan and low pressure compressor conceptual design.

The geometry section of the compressor code includes the capability to generate approximate blade shapes based on a simple circular arc blade camber line profile. The compressor code is run in the analysis mode, and the blade angles at the leading and trailing edges are specified. For rotors, the design point incidence, flow rate, and shaft rotational speed provides the blade angle at the leading edge. At the trailing edge, the work, or flow turning angle defines the blade angle at the blade exit. The tip solidity, number of blades, and flow path inner and outer radii are input parameters. The simple circular arc blade camber line is generated by the code at the hub, mean, and tip sections. The same procedure is followed to provide the stator vane camber line with simple circular arc shape. The following equations define the rotor blade and stator vane (referred to as airfoils in the following) camber geometric shape. The chord, C, is determined from the tip solidity, σ, the tip radius, r_2, and the number of airfoils, N, by the following equation.

$$C = \frac{2\ \pi\ r_2\ \sigma}{N} \tag{11}$$

The true chord can be closely approximated by the following equation which is for the isosceles triangle in Figure 5.

$$C = 2r_C\ Sin\frac{\theta}{2} \tag{12}$$

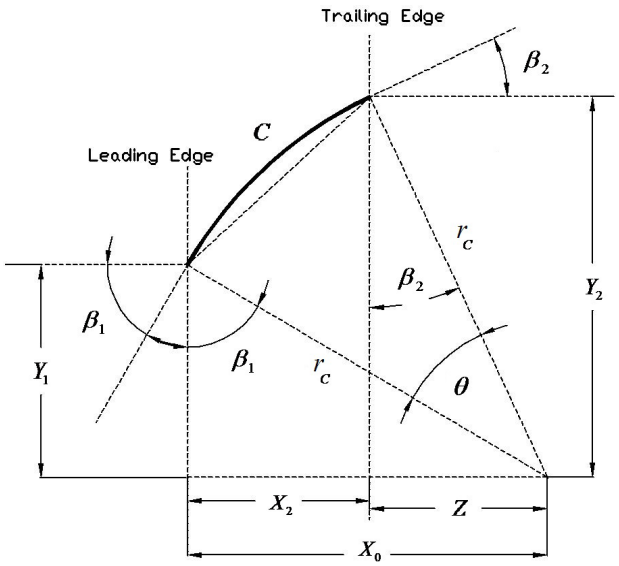


Figure 5: Compressor airfoil camber line geometry creation in COMDES. A s*imple circular arc camber line with radius r_c is generated in the compressor code based on input values of tip solidity of the rotor and stator, and angles at the leading (β_1) and trailing (β_2) edges.*

The following equations are used to solve for the coordinates of the airfoil leading and trailing edges and the coordinates of the center of the circular arc (X_O, Y_O) which defines the arc radius r_c at the blade mid-chord.

$$r_C{}^2 = X_O{}^2 + Y_O{}^2 \tag{13}$$

$$r_C{}^2 = \left(X_2 - X_O{}^2\right)^2 + Y_2{}^2 \tag{14}$$

$$Sin\beta_1 = \frac{X_O}{r_C} \tag{15}$$

$$Cos\beta_2 = \frac{Y_2}{r_C} \tag{16}$$

The airfoil section coordinates shown in Figure 5 are determined using the above equations for a circular arc. Both the rotor blades as well as the stator vanes are generated with a single circular arc.

Energy Balance between Ice Particle and the Air

As the ice passes through the inlet, fan, and LPC blade rows, it is continuously absorbing heat from the warmer air through the compressor blades. The amount of energy that the ice particle absorbs from the air while it experiences sublimation, melting, and evaporation will be described in the subsequent section named "Ice Particle Melting and Evaporation." The transfer of energy between the air and the ice particle can be expressed as a change in enthalpy. The enthalpy increase of the ice particle is equal to the enthalpy decrease of the air, which results in a decrease of the total temperature of the air. The energy balance between the ice particle and the air is determined iteratively with the results from the compressor code and the particle melt code exchanging boundary conditions of static temperature, static pressure and change in enthalpy until convergence. The change in total temperature of the air through the rotor is a function of the enthalpy rise due to the work input by the rotor, and the enthalpy that the ice particle removes from the air, as determined from the particle melt code. To account for effects of the energy exchange between the ice particle and the air through the compressor rotor, the Euler equation energy balance in the

compressor code has been modified to account for the enthalpy exchange between the particle and the air, and is represented by the following equation, where the subscripts 1 and 2 represent the conditions at the rotor leading edge (station 1) and trailing edge (station 2) respectively (see Figure 4).

$$J\ c_{p_{wet}}\ g_c\ (T_2 - T_1) = (U_2\ C_{U2} - U_1\ C_{U1}) - \Delta H_{melt(2-1)} \tag{17}$$

The solution of flow conditions at the rotor exit is obtained by executing the compressor code and the particle melt code iteratively, by passing boundary conditions of static temperature and velocity from the compressor code to the MELT code, where the enthalpy change (ΔH_{melt}) of the ice particle is calculated, and returned to the compressor code where the change in air temperature due to the change in enthalpy is calculated. A similar iterative process is utilized to calculate the change in air temperature due to enthalpy exchange between the air and the ice particles through the gaps between the rotor and stator, and through the stator vanes, where the subscripts 1 and 2 represent the inlet and outlet of the gap, and subscripts 3 and 4 represent the conditions at the stator leading edge and trailing edge respectively (see Figure 4). Note that when calculating the air temperature in the gap, the subscripts 3 and 4 are replaced with subscripts 2 and 3, respectively, in the following equation.

$$J\ c_{p_{wet}}\ g_c\ (T_4 - T_3) = \Delta H_{melt(4-3)} \tag{18}$$

Wet-Bulb Temperature

In this study, the wet-bulb temperature parameter is utilized as one of the key indicators of whether there is a risk of ice accretion within one of the compressor blade rows. A mathematical derivation of a wet-bulb temperature (T_{WB}) for application in analysis of mixed-phase icing tests has been derived and implemented into the mean line compressor flow analysis code, thus enabling the multistage code to compute the local wet-bulb temperature at each rotor and stator leading and trailing edge and at the stator throat. In this derivation T_{WB} is the temperature of an evaporating wet adiabatic surface and is a function of the surrounding air temperature (dry-bulb), air pressure, and moisture content. The T_{WB} is obtained by equating the rate of heat transfer to a surface to the heat loss by evaporation. During this process, it is assumed that the surface remains wet and any water added to replace that lost by evaporation is at T_{WB}. The analysis is an adaptation of heat and mass transfer principles described in Incropera & DeWitt[12] and thermodynamic concepts presented in Çengel and Boles[13]. It is assumed that the process is steady state, with adiabatic boundaries, except at the edge of the boundary layer. The surface (and water layer) is maintained at T_{WB}. The surface always remains wet (either evaporation is negligible from a mass loss perspective or water is replaced at T_S via some process). The static pressure remains constant, and the partial pressure of water vapor at the surface is assumed to be the saturation value at the surface temperature. Figure 6 illustrates the conceptual representation of the control volume for the thermodynamic balance model that is utilized to derive the wet-bulb temperature.

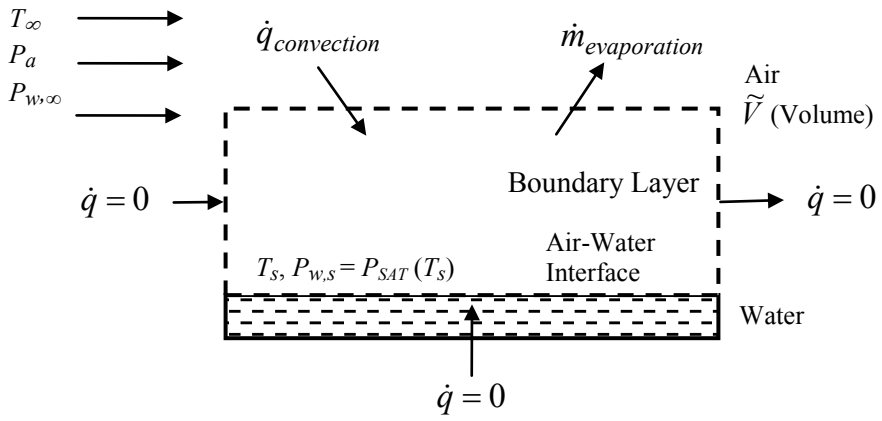


Figure 6: The control volume for the thermodynamic balance model.

An energy balance performed on the above control volume with the given assumptions is shown in Eq. (19).

$$\rho_a \ \widetilde{V} \ c_{p_a} \frac{dT_M}{dt} = h \ A \ (T_\infty - T_s) - \dot{m}_w \ L_v \tag{19}$$

Assuming a steady state process, the above equation can be rearranged to solve for the surface temperature as shown in Eq. (20).

$$T_s = T_\infty - \frac{\dot{m}_w \ L_v}{h \ A} \tag{20}$$

Examination of the above equation shows that T_{WB} will be less than the T_∞ when there is evaporation from the surface given the assumptions stated above.

To determine the amount of mass evaporated leaving the top of the boundary layer, it is assumed that the process is steady (i.e., no accumulation in the control volume). The evaporated water leaving the control volume is resupplied to the surface at T_{WB} via some unspecified process. It is also assumed that saturated conditions exist at the water and interface. Under these assumptions, the mass flux leaving the control volume is shown in Eq. (21):

$$\dot{m}_w = h_m \ A \ \rho_a \left(w_s - w_\infty \right) \tag{21}$$

Combining the mass flux leaving the control volume, Eq. (21), with the energy balance, Eq. (20), provides another expression for the surface temperature, as shown in Eq. (22):

$$T_s = T_\infty - \frac{h_m}{h} L_v \ \rho_a \left(w_s - w_\infty \right) \tag{22}$$

Invoking the analogy of heat and mass transfer yields another expression for the surface temperature, equation. This analogy is valid for both local and bulk transfer coefficients as well as laminar or turbulent conditions. The properties values are evaluated at the average of the free-stream and the surface temperature. A more detailed derivation of this expression is presented in Reference 14.

$$T_s = T_\infty - \frac{L_v}{c_{p_a} \ Le^{2/3}} \left(\frac{M_w}{M_a} \right) \frac{T_M}{P_a} \left[\frac{P_{w,s}}{T_s} - \frac{P_{w,\infty}}{T_\infty} \right] \tag{23}$$

Eq. (23) can be solved iteratively. The surface temperature, *Ts*, is the wet-bulb temperature, based on the above assumptions.

The partial pressure of water vapor at the surface is assumed to be the saturation value at the surface temperature, Eq. (24). The partial pressure of water vapor outside the boundary layer can be defined based on the ambient relative humidity, ϕ, as shown in Eq. (25).

$$P_{w,s} = \phi_s \ P_{sat,s} \ ; \text{ evaluated at } T_{WB} \quad (\phi_s = 1.0, \ \text{ fully saturated}) \tag{24}$$

$$P_{w,\infty} = \phi_\infty \ P_{sat,\infty} \ ; \text{ evaluated at } T_\infty \tag{25}$$

For this work, total conditions were used for T_∞ and P_∞ to calculate wet-bulb temperature to represent conditions at a stagnation point.

Ice Particle Melting and Evaporation

The capability to model ice particle and evaporation has been added to the COMDES compressor analysis code. The appropriate equations were taken from the LEWICE2D code and were implemented into the compressor code in the subroutine named MELT. This enables the code to calculate the change of phase of an ice particle which sublimates, melts, and evaporates, as it passes through the fan and low pressure compressor blades and stator vanes. The ice particle residence times through the compressor of existing engines are estimated based on the velocities at the leading and trailing edge of each blade row, and the blade chords and the axial spacing of the gap between the rotors and stators. This provides a reasonable estimate of the actual residence times of the ice crystals through each blade passage and gap, resulting in an accurate estimate of the sublimation, melting, and evaporation physics. The inlet specific humidity and the ice particle concentration (grams per cubic meter) and size distributions are specified at the inlet to the engine. For this study, values for ice particle size and concentrations in the atmosphere are varied parametrically, as there is limited data currently available on the ice crystal content of high altitude convective clouds.

After the flow conditions through the blade rows have been calculated by the compressor code, the static temperatures, pressures, and velocities are passed to the ice melting subroutine to determine the rate of melting and evaporation, and thus, the local melt ratio in each blade row. The ice particle sublimation, melting, and evaporation equations are shown below. The calculations for sublimation, melting, and evaporation take into consideration the local temperatures, pressures and residence times as they traverse the blade passages and gaps between blades at their mid span location. Conservation of mass on each particle results in the following equation for the ice particle size as a function of position, where w_s is the mass fraction of water vapor at the surface and w_∞ is the mass fraction of the water vapor in the free-stream.

$$d^2 = d_o^2 - \frac{4Sh\ \rho_a\ D_v}{\rho_i\ V_\infty}(x - x_o)(w_s - w_\infty) \tag{26}$$

Similarly, the rise in specific humidity is related to the amount of mass lost by the particle and is given by the equation below.

$$\omega = \omega_o + \frac{IWC}{\rho_a}\left(1 - \left(\frac{d}{d_o}\right)^3\right) \tag{27}$$

Equating the heat absorbed by the particles to a decrease in enthalpy in the airstream provides the decrease in air temperature.

$$T_a = T_{a,o} - \frac{L_s}{c_{p_a}}\frac{IWC}{\rho_a}\left(1 - \left(\frac{d}{d_o}\right)^3\right) \tag{28}$$

The enthalpy increase of the particle through the compressor is equal to the heat absorbed from conduction plus the energy provided by evaporation, resulting in the following equation for the change in particle temperature prior to melt

$$\frac{dT_i}{dx} = \frac{Nu}{\tau_T\ V_\infty}(T_a - T_i) + \frac{L_s\ Sh}{\tau_T\ c_{pa}\ V_\infty}\frac{\mathrm{Pr}}{Sc}(w_\infty - w_s) \tag{29}$$

The mass fractions of water vapor in the above equation are given by the equations below.

$$w_\infty = \phi_\infty \frac{M_w}{M_a}\frac{P_{w,\infty}}{P_a} \tag{30}$$

$$w_s = \phi_s \frac{M_w}{M_a}\frac{P_{w,s}}{P_a} \qquad (\phi_s = 1.0, \text{ fully saturated}) \tag{31}$$

The non-dimensionalization of the energy equation above results in the following term for the thermal response time

$$\tau_T = \frac{c_{p_i}\ \rho_i\ d^2}{6k_a} \tag{32}$$

The Nusselt number, Sherwood number, and the Prandtl number in these equations are provided by assuming spherical particles. If other particle geometries are of interest, the correlations can be easily modified for those cases.

$$\mathrm{Pr} = \left(\frac{c_p\ \mu}{k} \right)_a \tag{33}$$

$$Nu = \frac{h\ d}{k_a} \tag{34}$$

$$Nu = 2 + 0.6\,\mathrm{Re}^{1/2}\ \ \mathrm{Pr}^{1/3} \tag{35}$$

The Schmidt number is defined by the following equation.

$$Sc = \frac{\mu_a}{\rho_a\ D_v} \tag{36}$$

The Sherwood number is defined by the following equation.

$$Sh = \frac{h_m\ d}{D_v} \tag{37}$$

$$Sh = 2 + 0.6\,\mathrm{Re}^{1/2}\ Sc^{1/3} \tag{38}$$

The Reynolds number in the above equation is based on the particle size and the relative velocity of the particle to the velocity of the air stream

$$\mathrm{Re} = \frac{\rho_a |V_\infty - V_d| d}{\mu_a} \tag{39}$$

where the particle/drop velocity, V_d, is obtained by integrating the equation of motion

$$\frac{dV_d}{dt} = \frac{3}{4} C_d\,\mathrm{Re}^2\,\frac{\mu_a^2}{\rho_a \rho_i d^3} \tag{40}$$

Once the particle starts to melt, its temperature no longer changes. In this case, the energy equation above can be written as a change in the enthalpy or a change in the melt fraction[8] as shown below.

$$\frac{dn_{melt}}{dx} = \frac{c_{p_i}}{L_f}\frac{Nu}{\tau_T\ V_\infty}\left(T_a - T_i\right) + \frac{c_{p_i}}{L_f}\frac{L_s\ Sh}{\tau_T\ c_{p_a}\ V_\infty}\frac{\mathrm{Pr}}{Sc}\left(w_\infty - w_s\right) \tag{41}$$

The local fluid conditions of temperature and pressure are used in the above equations to determine the rate of sublimation, ice melting, and evaporation. The distance the ice particle traverses through the compressor rotors and stators is determined from the length of the engine inlet, and the geometry of the rotor blades, stator vanes, and the axial gaps between the rotors and stators. The distance through the fan and LPC blade rows is estimated from the true blade chord of the rotors and stators at the mid span, and the axial distance through the gaps between the blades, as illustrated in Figure 7. Note that each stage is analyzed at the blade edges as shown in Figure 4. In this study, the

simple circular arc blade camber line shapes are utilized and provide a means of easily estimating the geometry of the compressor blades and vanes. This facilitates estimating the distance traveled by the water/ice particle. The COMDES and MELT codes exchange boundary conditions of pressure, temperature and velocity, to estimate the residence time of the particle through each blade row, as well as to determine the rate of ice sublimation, melting, and evaporation.

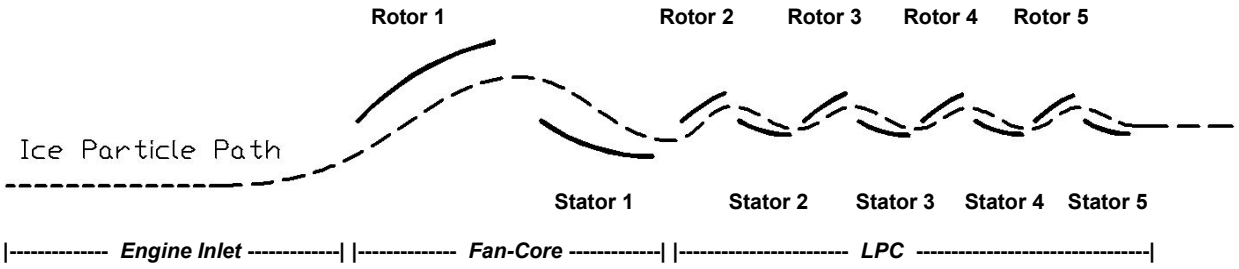


Figure 7: Ice particle path through the fan-core and low pressure compressor stages. *Rotor and stator blade mean camber line chord at the mid-span section is used to estimate the distance traveled and residence time of the ice particles.*

Figure 7 illustrates the ice particle path through the rotor blades in the relative frame of reference, while the path through the stator vanes is in the absolute frame of reference. The calculations of ice sublimation, melt, and evaporation are performed in increments from the leading to the trailing edge of each rotor and stator, as well as through the axial gap between the blades. As the engine is flown through the flight trajectory, the ice particle sublimation, melting, and evaporation is calculated in each rotor and stator blade row. The amount of water due to sublimation and evaporation is added to the local value of specific humidity, thus having an effect on the local relative humidity, and likewise on the local wet-bulb temperature calculation in the compressor code. The MELT code is also used to evaluate the particle conditions through the engine inlet which is then provided as ice particle initial conditions at the leading edge of the fan-core.

Identifying the Risk of Ice Accretion

When the wet-bulb temperature and melt ratio parameters indicate a risk of ice accretion at a particular location in the compressor, an additional blockage can be applied, which will result in a change in the performance of the compressor and engine. Though not implemented in the current study, the capability to simulate turbofan engine performance with additional blockage due to accretion has been previously demonstrated in References 4, 5. In that study, the blockage due to accretion was varied parametrically. The approach was to add blockage as a function of empirically derived ice growth rate, and time spent at that operating condition. However, the main focus of this paper was to determine the risk of ice accretion and its location, with an estimate of ice particle melt ratio, and the wet-bulb temperature calculation with no additional blockage due to ice accretion.

Using data from laboratory testing,[10] Figure 8 shows the normalized ice accretion growth rate as a function of measured liquid water content (LWC_m) to injected total water content (TWC_{inj}). In this figure, the measured ice growth rates (G) are normalized by the theoretical maximum ice growth rate, G_{max}, as shown in Eq. (42). The data from this experiment suggest that some liquid water needs to be present for accretion to occur. A non-zero growth rate, G/G_{max}, was first observed when the ratio of LWC to TWC increased to 14% (Figure 8). Only the portion of the data with wet-bulb temperatures below freezing is represented in Figure 8. However, data for wet-bulb temperatures marginally above freezing have also resulted in ice accretion with shedding, as reported in Reference 14. The ice accretion growth rate as a function of the ratio of LWC to TWC data shown in Figure 8 is included in Appendix A.

In this study it is assumed that ice accretion can only occur at values of T_{WB} that are below the temperature of 499 R (~ 4°C). This assumption is based on observations[10] that showed significant growth rates and buildup of ice at values of T_{WB} below 499 R. However, at values just above freezing (between 492 R and 499 R), the ice was slushy, and had a tendency to shed before a large buildup of ice could occur, but at values below freezing, the accreted ice did not shed and continued to grow as a function of time, provided that there was a positive melt ratio. Note that the effects

of ice shedding have not been modeled in this study. However, the detrimental effects of shedding on engine performance cannot be ruled out. Therefore, in this study the upper limit of 499 R is used as the maximum wet-bulb temperature ice accretion risk indicator. The criteria for the risk of ice accretion therefore are the wet-bulb temperature being less than 499R (i.e., slightly above freezing or below), and when the ratio of *LWC* to *TWC* exceeded 10%, which includes some margin in comparison to the 14% ratio that was observed in the experiment to have significant growth rate. In this study, the ratio of *LWC* to *TWC* is an approximation to the melt ratio used elsewhere in this document.

It is important to note that the data in Figure 8 is preliminary as the values LWC_m and TWC_{inj} require corrections which are not yet well understood. The subscripts *m*, referring to the *LWC*, denotes a measured value using a hot-wire probe which has not yet been characterized in mixed-phase flow. The value used for *LWC* in Figure 8 is the uncorrected value. The subscript *inj*, referring to the *IWC*, denotes a bulk injected value using bulk water or ice flow rate data assuming a uniform cloud. The corrections to the *LWC* and *IWC* are topics of current research efforts. In addition, as higher fidelity, multi-disciplinary computational tools become available with accretion, erosion, particle breakup, and shedding models, they can result in more accurate predictive capability for the growth rate.

$$G_{\max} = \left(\frac{TWC_{inj}}{\rho_i} \right) V_\infty \tag{42}$$

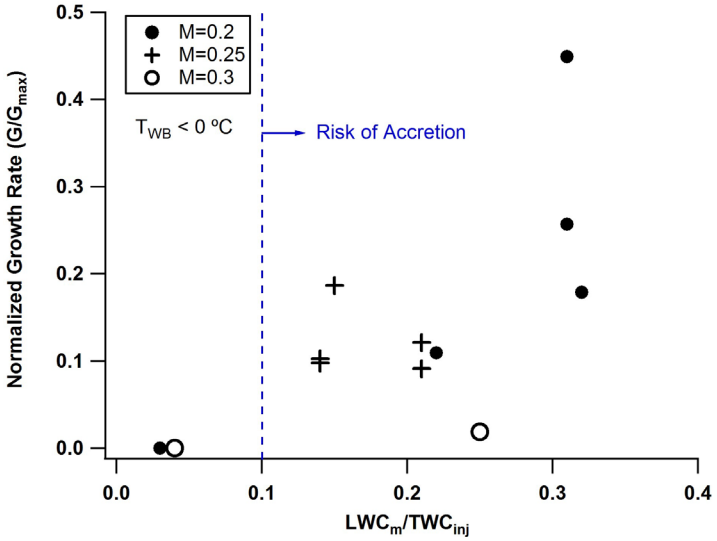


Figure 8: Ice accretion growth rate as a function of the liquid-water-to-total water content ratio (i.e., melt ratio) when the wet-bulb temperature was below freezing[10]. *A finite rate of ice growth was observed when the melt ratio was above 10%.*

For completeness, an outline of how the additional blockage due to high growth rate of ice accretion can be utilized in the compressor flow analysis code. The amount of blockage due to ice accretion on the blades can be estimated from the maximum growth rates of ice accretion that have been observed during laboratory testing at the NRCC laboratory.[10] The size of the ice growth is a function of time (*t*) spent at that operating condition and the ice growth rate is specified in terms of length per time. Although this growth rate is measured at a single point (i.e., the leading edge) of a blade, it is used here to generate a first order estimate of the blockage within a compressor.

The amount of ice blockage in a blade row is estimated in the compressor code from the measured growth rate (*G*) and the blade spacing parameter (*S*). The ice accretion on the compressor vanes is illustrated in Figure 9, and shows how the blade spacing is reduced due to the estimated accretion.

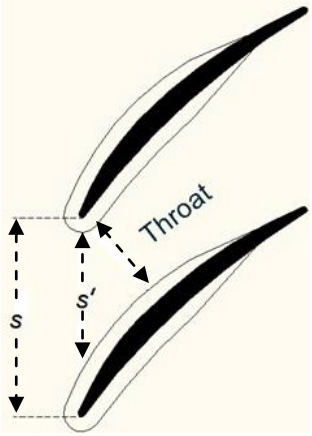


Figure 9: Estimating the blockage due to ice accretion in the stator blade row. *The ice accretion can be modeled in the compressor code as an additional blockage at the stator leading edge and throat.*

The blockage from ice accretion can be modeled in the compressor code as an additional blockage and added to the nominal value of aerodynamic blockage. The reduction in the circumferential blade spacing (S') is estimated by Eq. (43), from the empirical value of ice growth rate (G), the time spent at that operating condition (t), and the nominal blade spacing (S). The reduced blade spacing results in a reduced annular area at the stator inlet and exit, and also a reduced throat area.

$$S' = S - 2tG \tag{43}$$

The blockage due to ice accretion is estimated from the reduction in blade spacing. The performance of the compressor and the engine system, computed with the additional blockage added parametrically (not as a function of time and growth rate) at a specific location in the compressor, has been demonstrated in References 4, 5.

III. Analysis of Turbine Engine Performance in an Ice Crystal Environment

A. Fan and Low Pressure Compressor Conceptual Design

In order to perform the engine icing study, it was necessary to have the geometry of the low pressure compressor (LPC) in adequate detail such that the flow conditions between each blade row can be computed with the mean line compressor flow code. The conceptual design task was performed for a notional turbofan engine in the 40000 lb thrust class having a bypass ratio of 5.8 with the mean line compressor flow analysis code. The rotor and stator blade shapes were approximated with simple circular arcs. The conceptual design effort of the notional fan-core and LPC determined the key dimensions that define the blade and flow path geometry. Figure 10 illustrates the notional fan and low pressure compressor that was used in this study. The fan-core and LPC design point aerodynamic performance is included in Appendix B as output from the compressor code analysis.

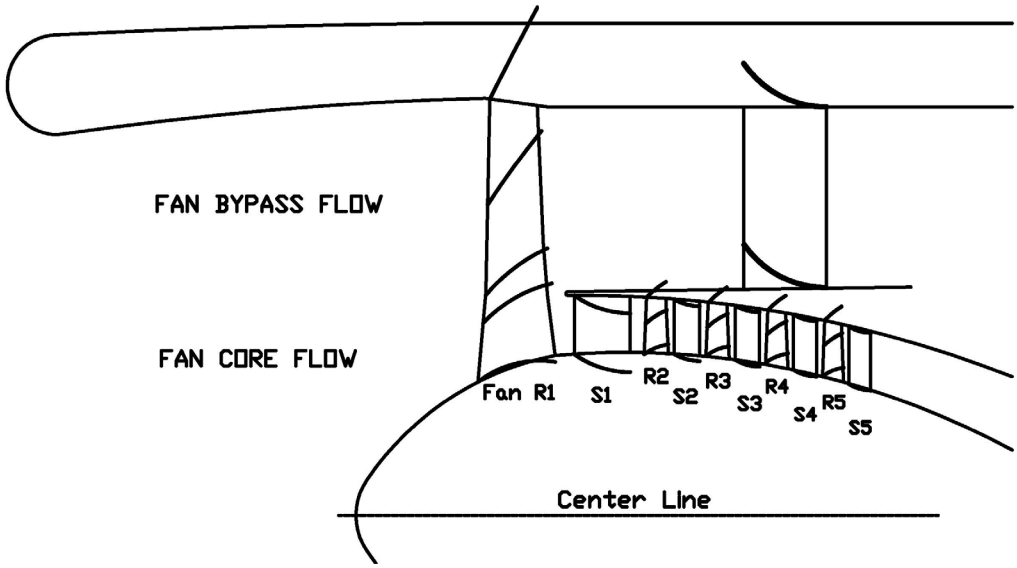


Figure 10: Fan and low pressure compressor of the notional high bypass ratio turbofan engine.

A compressor flow model with the COMDES code represents the fan-core and LPC in the NPSS engine system model. The radial view of the blade centerline sections are superimposed onto the flow path in Figure 10. Table I lists key aerodynamic and geometric design parameters at the root-mean-square (RMS) radius of each blade row and stator vane. The fan-core is considered the first stage in this study, followed by a four stage LPC.

Table I – The Fan-Core and LPC Design Point RMS Radius Geometric and Aerodynamic Parameters

	Fan-Core Rotor1	Fan-Core Stator1	LPC Rotor2	LPC Stator2	LPC Rotor3	LPC Stator3	LPC Rotor4	LPC Stator4	LPC Rotor5	LPC Stator5
Blade Chord, in.	7.434	5.496	2.401	2.401	2.344	2.373	2.240	2.270	2.125	2.132
AxialChord,X_2 in	6.804	5.235	2.130	2.130	2.066	2.284	1.969	2.180	1.858	2.044
Blade Gap, X, in.	1.811	1.309	0.567	0.591	0.550	0.571	0.524	0.545	0.495	0.511
Radius, r_c, in.	12.535	9.038	7.352	4.645	6.784	4.37	6.354	4.069	5.750	3.752
Leading Edge										
Press Static, psia	13.67	14.67	16.61	18.785	20.12	22.45	23.91	26.41	27.88	30.04
Temp Static, R	508.0	522.1	542.22	564.55	576.56	597.76	609.40	629.48	640.0	656.21
Mach no., abs	0.38	0.638	0.46	0.534	0.42	0.499	0.39	0.449	0.34	0.417
Blade β_1, deg	47.20	35.4	42.3	30.6	23.5	31.5	43.80	32.4	44.80	33.0
Abs Flow Angle	0	36.15	0	31.22	0	32.18	0	33.00	0	0
Tip Radius, in.	20.63	20.617	20.530	20.3433	20.096	19.6905	19.3131	18.8420	18.2524	17.6890
Hub Radius, in.	12.51	15.102	15.211	15.2026	15.054	14.8484	14.3197	13.7204	13.0749	12.2606
Trailing Edge										
Press Static, psia	14.69	16.35	18.76	19.79	22.40	23.56	26.19	27.53	30.06	31.22
Temp Static, R	521.86	539.72	563.96	573.81	597.00	606.82	627.60	637.69	655.84	663.90
Mach no., abs.	0.63	0.481	0.53	0.448	0.49	0.413	0.46	0.368	0.41	0.338
Blade β_2, deg	12.7	0	23.5	0	23.5	0	23.5	0	23.5	0
Abs Flow Angle	36.93	0	31.59	0	32.30	0	32.27	0	33.24	0
Tip Radius, in.	20.63	20.573	20.445	20.1704	19.925	19.4117	19.0737	18.4850	17.9280	17.2148
Hub Radius, in.	15.0	15.190	15.223	15.2026	14.848	14.4742	13.9111	13.2848	12.4811	11.6228

B. The Performance of the Notional Turbine Engine System Model through a Typical Commercial Aircraft Flight Trajectory

In order to perform the engine icing study, the NPSS-COMDES engine model was executed at numerous operating conditions through a flight trajectory. The inlet conditions of ice crystal concentrations in grams per cubic meter, particle size, and the elevated ISA (International Standard Atmosphere) temperature were varied parametrically at ISA +0 R, +18 R, +27 R, and +36 R, since that is in the range of where ice accretion has been reported, as was illustrated in Figure 1. The detailed analysis of the fan-core and low pressure compressor with the COMDES code was obtained at each operating condition. The engine analyses were performed with the fully coupled computer models described in the above sections. The system model was utilized to determine the performance of the notional 40000 lb_f thrust class engine through a typical flight trajectory of a commercial aircraft (Figure 11).

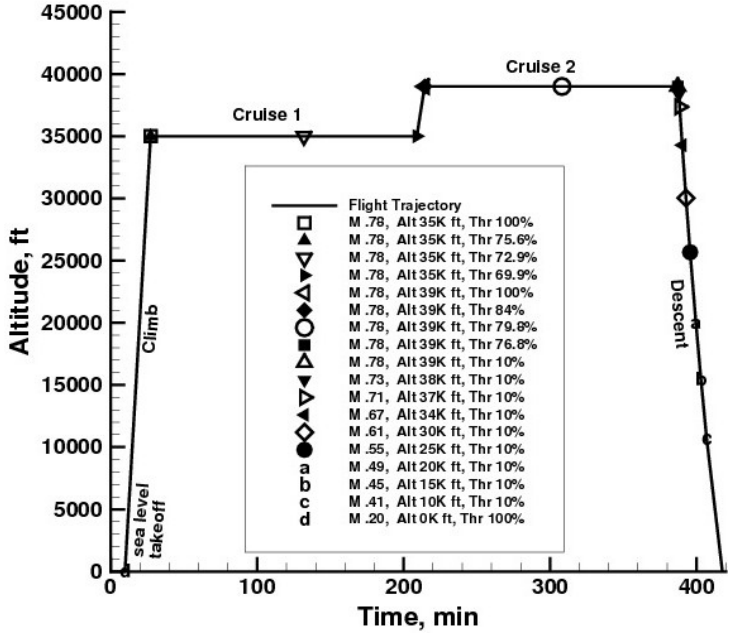


Figure 11: Flight trajectory for a typical commercial aircraft. *The notional 40000 lb thrust engine is "flown" through the vehicle flight trajectory to determine the blade row where conditions for ice accretion may be possible.*

The notional flight trajectory[4, 5, 15] used in this study includes takeoff, climb, two cruise altitudes, and one descent profile. The detailed output listing of the flight trajectory is included in Appendix C. The first cruise altitude is at 35000 feet, where the engine thrust is reduced from 100% down to 69.9% of maximum thrust at the end of the cruise. The aircraft then proceeds to 39000 feet where again the thrust reduces from 100% down to 76.8% maximum thrust at that altitude. The engine is then spooled back to 10% maximum thrust at 39000 feet as it prepares to descend in altitude. The engine is maintained at 10% maximum thrust as it descends to 10000 feet, which was the lowest altitude that was analyzed in this study.

Figures 12 and 13 illustrate the baseline pressure ratio and efficiency characteristic maps of the fan-core and LPC and the superimposed operating points through the flight trajectory. The baseline maps have no additional blockage due to ice accretion. These maps were generated by the compressor code executed in the stand-alone mode (independent of the NPSS system modeling code); however, the operating points along the map were obtained by running the fully coupled engine system model, the compressor flow analysis, and the melt codes as illustrated in Figure 3. The plot file of the overall compressor maps shown in Figures 12 and 13 are listed in Appendix D. The plot file of the fan-core and LPC performance along the engine operating line is listed in Appendix E. The complete output listing of the mean line compressor flow analysis code, along the entire baseline performance map and the flight trajectory, are listed in Appendices D and E of Reference 5 respectively.

The risk of ice accretion on a stator is a function of where in the flight trajectory the engine is operating and the atmospheric conditions of temperature and pressure, as well as the ice particle concentration and size. As will be illustrated in a later section of this paper, at high altitudes, the rear stages of the LPC may be at risk for accretion, while at lower altitudes, the risk of accretion may be in the front stages.

Even though no additional blockage is added at any location to the compressor, the compressor analysis code was utilized in this study to determine which stage had a risk of ice accretion, based on the wet-bulb temperature and melt ratio criteria. This could not have been determined from an LPC compressor map showing overall performance alone.

In the previous study[4] that included compressor flow analysis with parametric blockage, the LPC performance with ice accretion could not be represented by traditional compressor performance maps, since the amount of blockage due to ice, and the stage where there is blockage, was different along each speed line, and depended on the altitude and thrust level it is operating at in the flight trajectory. The solution that was chosen was to fully couple the NPSS and the COMDES codes, thus the compressor performance was passed to the system model for each unique point of operation, which included the unique amount of blockage due to ice accretion at a specific blade row.

In this study the performance of the engine with blockage is not addressed; as this was addressed in an earlier publication. The focus here is to more accurately predict the locations in the low pressure compression system where there is a risk of ice accretion, as well as the atmospheric conditions that could support it, along a flight trajectory. The fully coupled NPSS_COMDES_MELT code has been executed through the flight trajectory, and the results of the icing risk analyses, in each stage of the LPC, are shown graphically in the following figures.

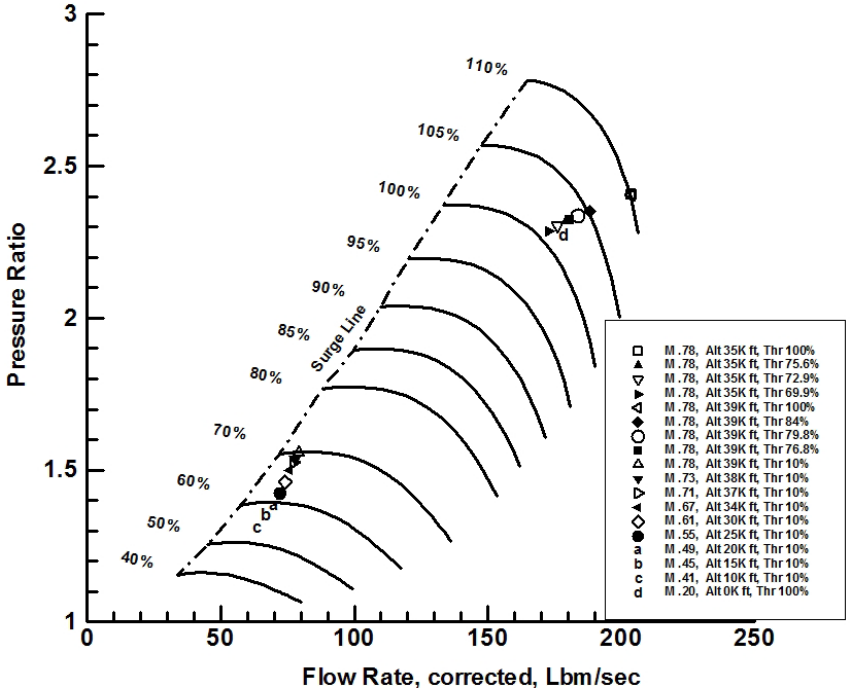


Figure 12: Fan-core and LPC pressure ratio showing the baseline performance. *Operating points of the fan-core and LPC throughout the flight trajectory are superimposed onto the baseline pressure ratio map.*

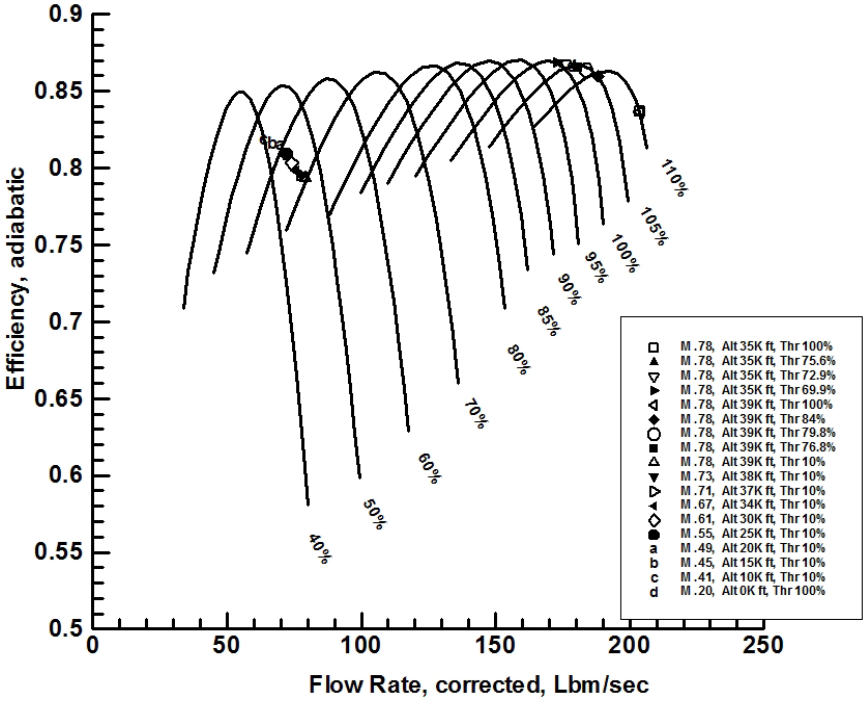


Figure 13: Fan-core and LPC performance showing the baseline efficiency map. *Operating points of the fan-core and LPC throughout the flight trajectory are superimposed onto the baseline efficiency maps.*

A range of ice particle concentrations, and particle diameters were analyzed with the icing code, at various ambient temperatures above the ISA standard. The local values of wet-bulb temperature and melt ratio at each LPC blade and stator inlet and outlet, were computed for the engine operating conditions through the vehicle flight trajectory. The performance of the fan and LPC stages were analyzed.

Ice Particle vs. Ambient Temperature

In this study we assumed that ice crystals cannot form at temperatures above freezing. As illustrated in Figure 1, the range of temperatures where engine icing events occurred was between the ISA temperature and 36 R above the ISA temperature. The altitude at which freezing occurs is a function of ISA offset temperature, as illustrated in Figure 14. For example, at an ISA offset temperature of 0 R, the minimum altitude where ice crystals can form in the atmosphere is 7500 ft, while with an offset of +36 R, the minimum altitude is 17400 ft. In the study the ISA offset temperatures of +18, +27, +36 R were considered through a wide range of altitudes along the flight trajectory. However, at conditions below the 492 R line in Figure 14, the assumption is that the particle is all liquid water; therefore the melt ratio even before entering the engine is equal to 1.0. Likewise, the calculated wet-bulb temperature at these conditions is above the range where ice accretion is a risk, based on the analysis. Therefore, no conditions exist that would support ice accretion at operating points below the 492 R line shown in Figure 14.

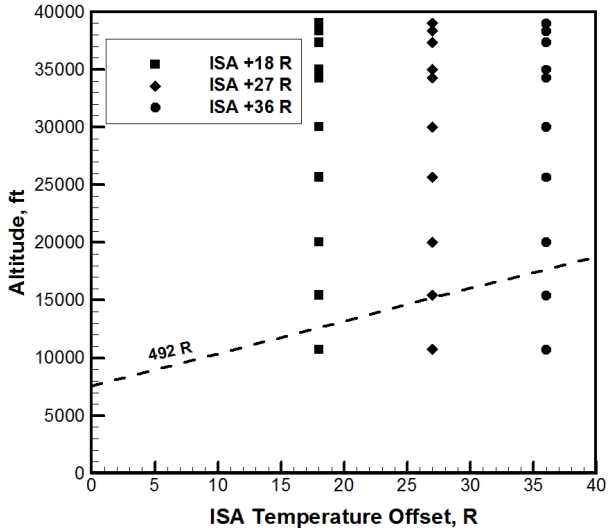


Figure 14: Altitude vs. ISA offset temperature indicating the assumed minimum altitude where ice crystals can form. *Note that ice crystals are not expected to form at conditions below the 492 R line.*

Ice/Water Particle vs. Air Temperature through the Engine Inlet

In the NPSS code, there is a model to estimate the aerodynamic performance of the engine inlet, from the entrance region through the plane of the fan face, based on the area ratio and length. The change in total temperature due to the forward velocity of the vehicle is estimated, and the static temperature is calculated from the entrance of the engine to the plane of the fan leading edge. At the entrance, the temperature of an ice crystal is equal to the ambient temperature. However, because the aircraft is flying at a moderately high Mach number, the total temperature of the air is increased above the ambient, and the change in temperature is calculated based on the Mach numbers at the entrance and at the fan face. As the air is diffused through the subsonic inlet, the static temperature of the air rises even before reaching the fan leading edge. At high altitude operating points, for example during the descent mode at an altitude of 38334 ft. and vehicle Mach .73 in Figure 11, the temperature of the ice particles in the engine inlet is typically well below freezing, until the particles are inside the fan-core and LPC, as illustrated in Figure 15. Through the inlet and most of the fan-core and LPC, the ice particle temperature rises and also sublimates. Note that throughout the flow path the enthalpy exchange between the ice particle and the air is iteratively computed.

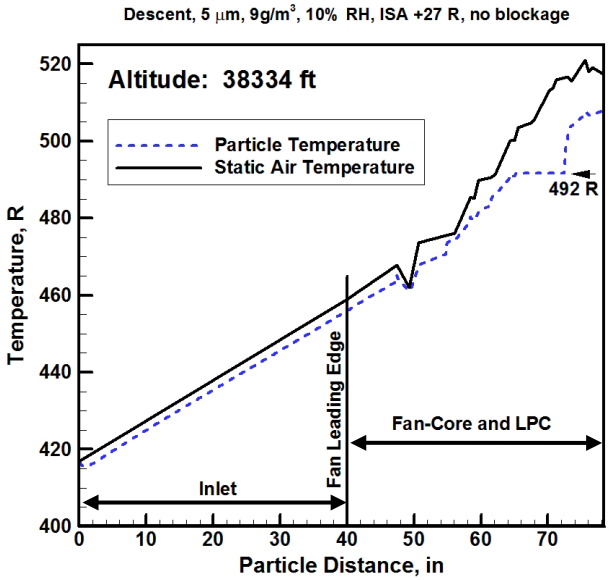
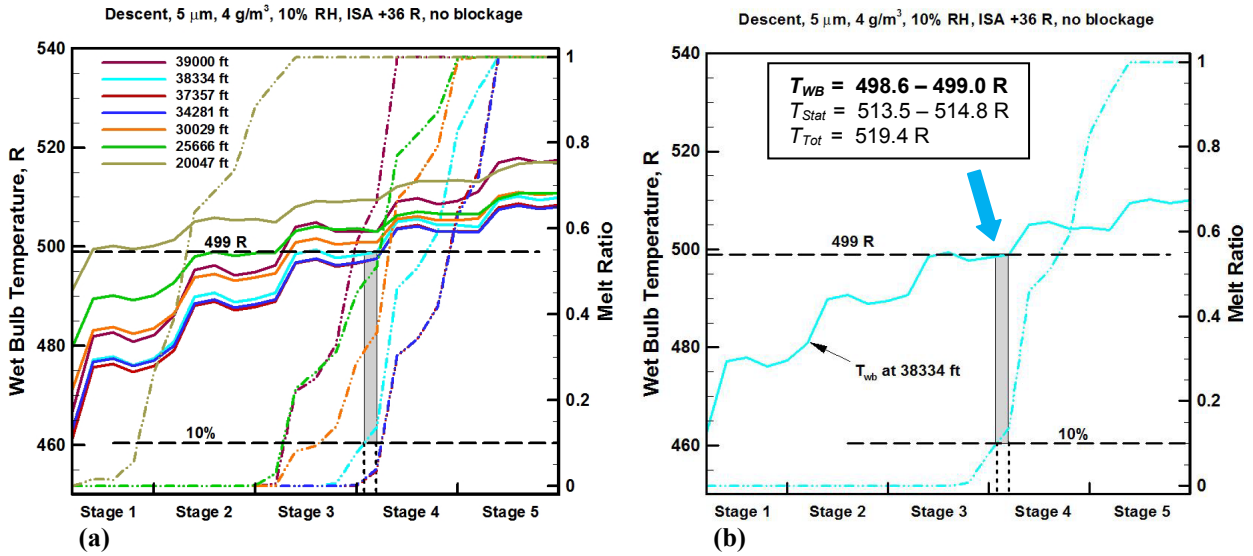


Figure 15: The temperature of the ice crystal particles lags the static temperature of the air through the engine inlet, the fan-core and the LPC at 38K ft during the descent mode, with particle travel distance.

At a distance traveled of 64 inches, the particle reaches the freezing temperature of water (492 R) and begins the melting and evaporation process. The ice-water particle remains at 492 degrees until it is fully melted at 72 inches of distance traveled. At 72 inches the particle is fully melted (melt ratio = 1.0). Beyond 72 inches the fully melted particle continues to rise in temperature while continuing to evaporate. Although the computer code models the air flow and ice crystal physics through the inlet portion of the engine, the subsequent figures will illustrate the flow conditions of wet-bulb temperature and melt ratio only through the fan-core and LPC, since those are the areas where there can be risk of accretion due to ice crystals. Details of ice crystal temperature and static temperature of the air as a function of temperature data are provided in Appendix F.

Methodology to Determine Ice Risk

The methodology to determine whether there is a potential risk of ice accretion throughout the flight trajectory in the low pressure compression system involved tracking the wet-bulb temperature and the melt ratio through the flow path. The figures below illustrate how varying the ice particle size and temperature above ISA through the descent affected the local wet-bulb temperature and the melt ratio through each blade row in the fan-core and LPC. To illustrate this methodology Figure 16(a, b) is provided as an example. Figure 16(a) shows the seven descent mode altitudes that were analyzed, from 39000 to 20047 feet. In this and similar figures, the solid lines show the calculated wet-bulb temperature while the hatched lines show the melt ratio.



Figures 16(a, b): Wet-bulb temperature and melt ratio both indicate that there is a risk of ice accretion between stage-3 and stage-4 during descent. (a) All altitudes. (b) Risk of ice accretion at 38334 feet.

With an ice particle size of 5 μm, an IWC of 4 g/m^3, and the inlet temperature of +36 R offset from the ISA, it was found that at 38334 feet altitude, the wet-bulb temperature and the melt ratio criteria are both met at the same location, as indicated by the gray shaded area of Figure 16(a). Figure 16(b) shows the results at the 38334 feet extracted from Figure 16(a). This indicates that there is a risk of ice accretion in the stator gap of stage-3, specifically just past the stator trailing edge. The wet-bulb temperature in the stage-3 stator gap is 498.6 R. The range of static temperature is 513.5-514.8 R, while the total temperature is 519.4 R. This methodology was used in the parametric icing risk analysis that follows, where particle size, IWC, and ISA offset temperature were varied through the flight trajectory (Figure 11), which includes two cruise altitudes and a descent mode.

Parametric Icing Risk Analysis

The parametric study of the engine performance was carried out by varying the specified inlet conditions of ice particle size, concentration, and ambient temperature offset above the ISA. This study extends the work from an earlier paper[16] with updated COMDES and MELT analysis codes, as well as a broader range of IWC. Furthermore the complete analysis results are included in the Appendices. Each cruise altitude was studied at four separate operating points, representing different thrust settings, as shown in Figure 11. In Figures 18-23, the ice particle size studied were 5, 10, 25, 50, and 100 μm; the ISA temperature increase was varied from +18 R to +36 R. The cruise conditions studied were at a range of engine thrust settings from 100% to 69.9% of maximum thrust for the given

altitude. In the descent mode, the thrust was set at 10% of maximum thrust at each altitude analyzed. The ice concentrations in this study were 2, 4, and 9 g/m^3. The results shown in the following figures indicate whether there is a risk of ice accretion at the specific altitude operating condition, ice crystal concentration, size, and temperature above ISA. The scale in Figures 18-23 indicates the wet-bulb temperature variation through the blade rows and axial gaps in the fan-core and low pressure compressor. The melt ratio is also plotted on a scale from 0.0 – 1.0, where 0.0 indicate no melting, and 1.0 indicates an ice particle that is 100% melted. Note that the inlet relative humidity was kept at 10%, since it was noticed early in the analysis that it did not have a strong effect on the results. It was observed that even if the ambient relative humidity at the fan face was 80%, the rise in temperature through the rotor blades quickly reduced the local relative humidity in each stage to significantly lower levels, as illustrated in Figure 17. The rate at which the relative humidity is reduced through the stages is also a function of engine thrust level, as shown in Figure 17. The local value of relative humidity has a direct effect on the local wet-bulb temperature determination, as calculated by the equations (23, 24, and 25).

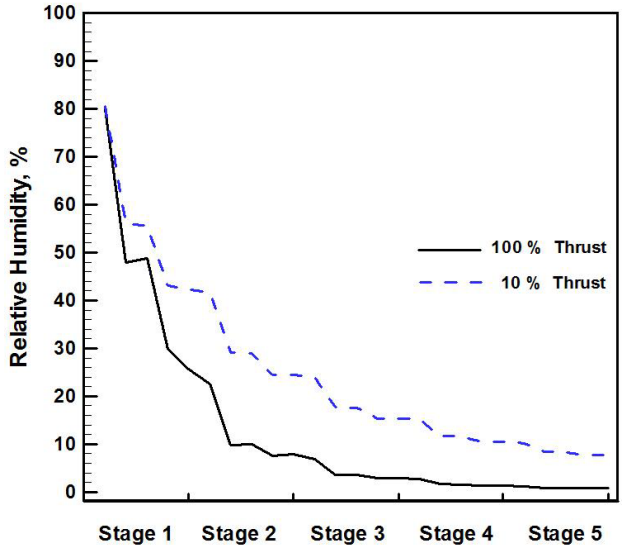


Figure 17: Change in relative humidity through the five stage fan-core and low pressure compressor, at 100% and 10% engine thrust levels. Note that the relative humidity is quickly reduced in each subsequent stage.

Cruise at 35000 feet:

The analysis was conducted at the altitude cruise condition of 35000 feet using the methodology described above. The engine thrust level was varied between 100% and 69.9% of max thrust at this cruise altitude. The particle size was varied from 5 µm to 100 µm, and the IWC was varied between 2 and 9 g/m^3, but only the results for the 2 g/m^3 are presented below as representative at this cruise altitude.

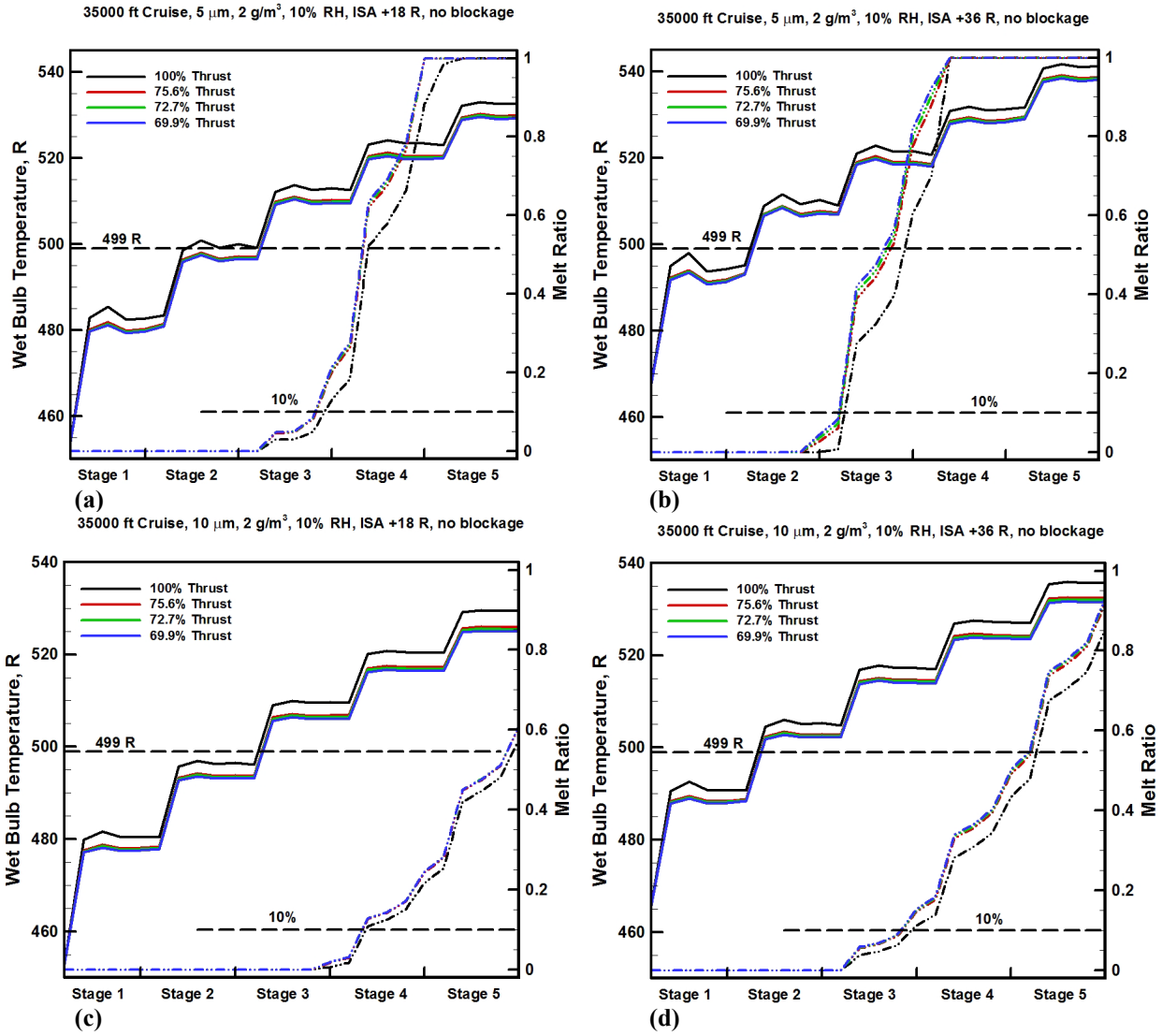
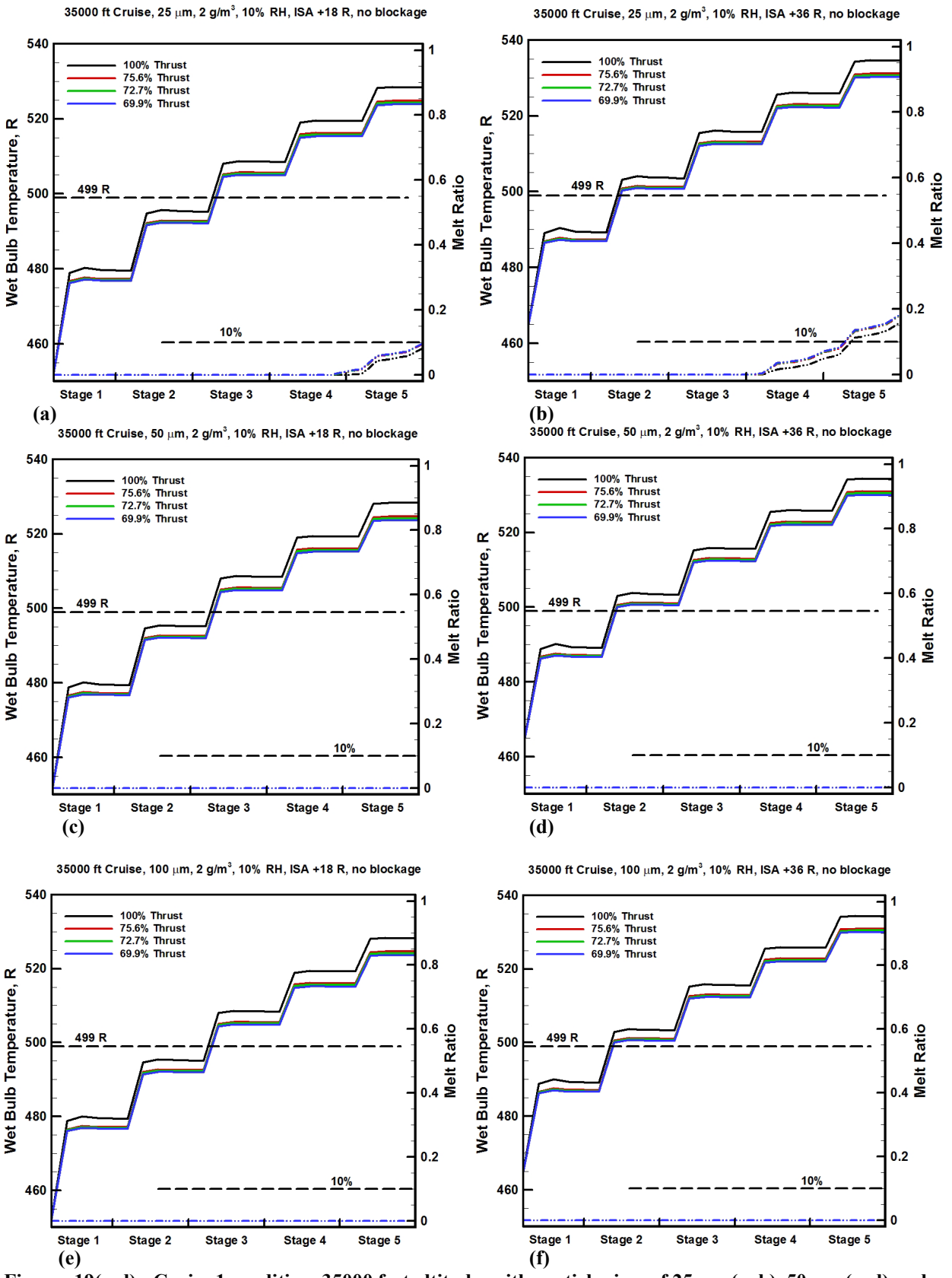


Figure 18(a-d): Cruise condition at 35000 feet altitude, with particle sizes of 5 µm (a, b) and 10 µm (c, d) and ISA temperatures of +18R (a, c) and +36R (b, d).

The results illustrated in Figure 18(a-d) show no risk of ice accretion is possible at this cruise condition with these particle sizes (5 and 10 µm), since the wet-bulb temperatures are excessively high in the compressor stages where the 10% melt ratio condition is met. For example, the 10% melt ratio criterion is reached in stage-3 as shown in Figure 18(a), but the wet-bulb temperature there is 512 R, and is well above the 499 R temperature limit. The effects of ice particle size and elevated ISA temperature can be seen in the location within the LPC where the minimum melt ratio criterion of 10% is reached. At all of these conditions, even though the melt ratio of 10% is achieved in the LPC, the wet-bulb temperature is well above the 499 R limit, at that location. Therefore, there is no expected risk of ice accretion at these operating conditions.

The ice crystal particle size was further increased at this cruise altitude to determine the risk of ice accretion, as shown in Figure 19(a-f). The particle sizes were 25, 50, and 100 µm, with the same increment of temperatures (+18 R and +36 R) above ISA. The range of engine thrust settings varied from 100% to 69.9% of maximum thrust.

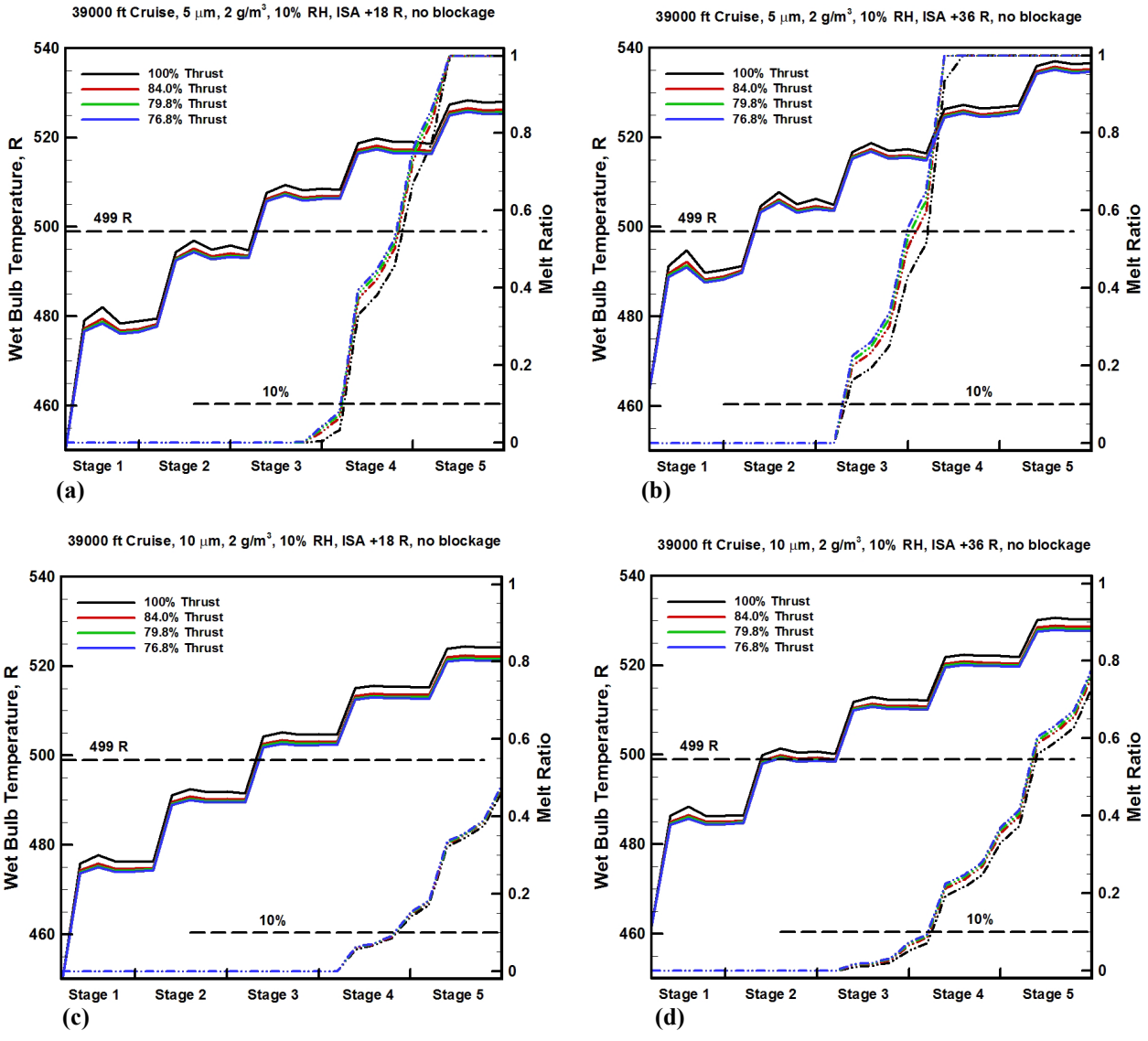


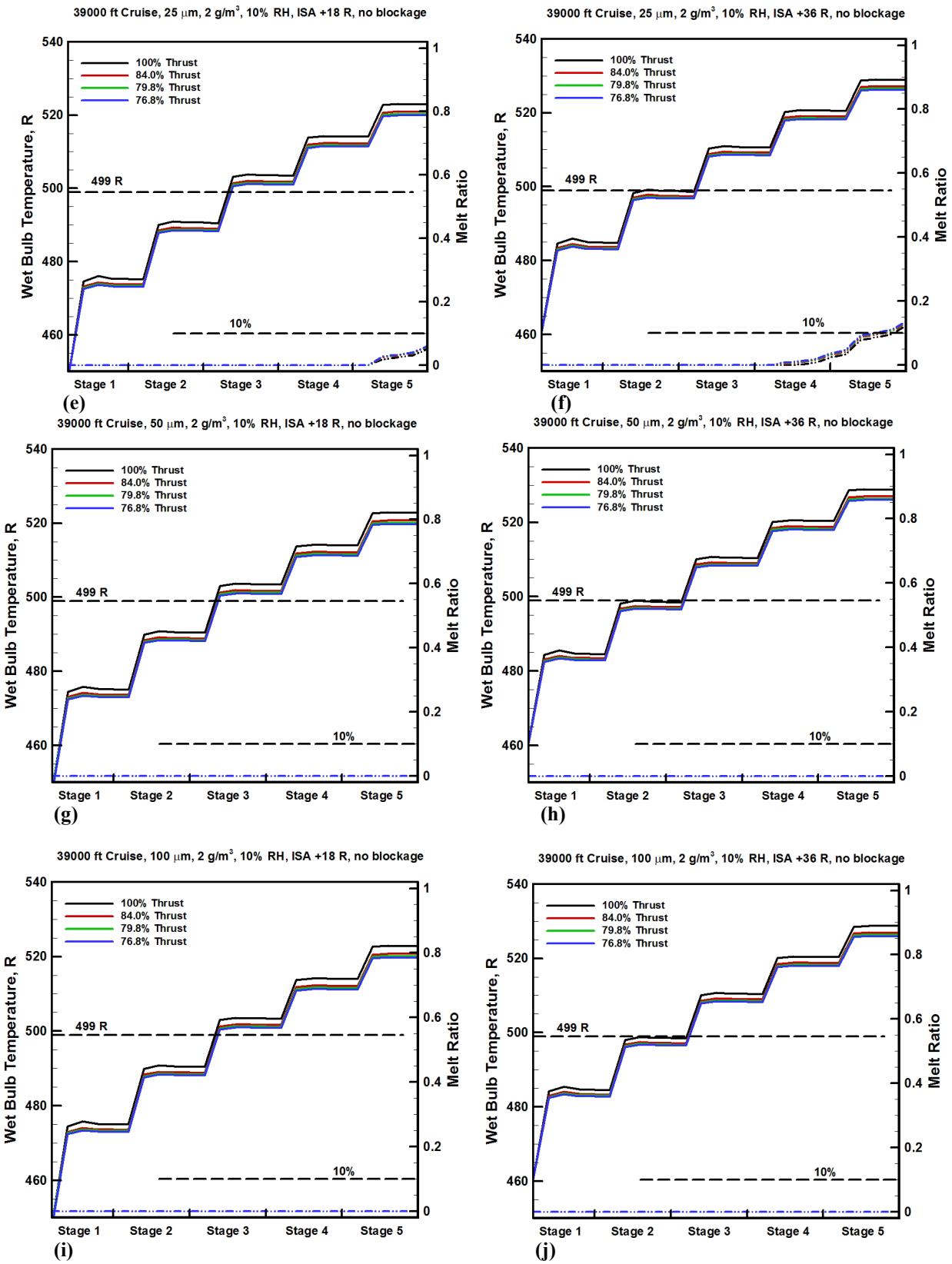
Figures 19(a-d): Cruise 1 condition, 35000 feet altitude, with particle sizes of 25 µm (a, b), 50 µm (c, d) and 100 µm (e, f) and ISA temperatures offsets of +18 R (a, c, e) and +36 R (b, d, f).

The results illustrated in Figure 19(a-b) show that the 10% melt ratio limit is reached only in stage-5 with the 25 µm particle. However, the wet-bulb temperature in stage-5 is well above the 499 R temperature limit. In Figure 19(c-f) the 50 and 100 µm particles do not melt through the entire fan-core LPC, and the melt ratio remains zero. Therefore, there is no risk of ice accretion at any of the conditions illustrated in Figures 19(a-f). Note that even though the ice particle may not have melted, there was some degree of sublimation, adding to the specific humidity of the air and is accounted for in the flow analyses. Appendix G is a listing of the NPSS cycle analysis and Appendix H is the corresponding output listing of the compressor analysis code for the altitude cruise conditions at 35000 feet.

Cruise at 39000 feet:

The next points in the flight trajectory analyzed were at the cruise altitude of 39000 feet. The ice crystal particle size was varied from 5 µm to 100 µm in diameter, with the temperature offset at +18 R and +36 R above ISA. The results are illustrated in Figures 20(a-j). The range of engine thrust settings at this cruise condition was varied from 100% to 76.8% of maximum thrust.



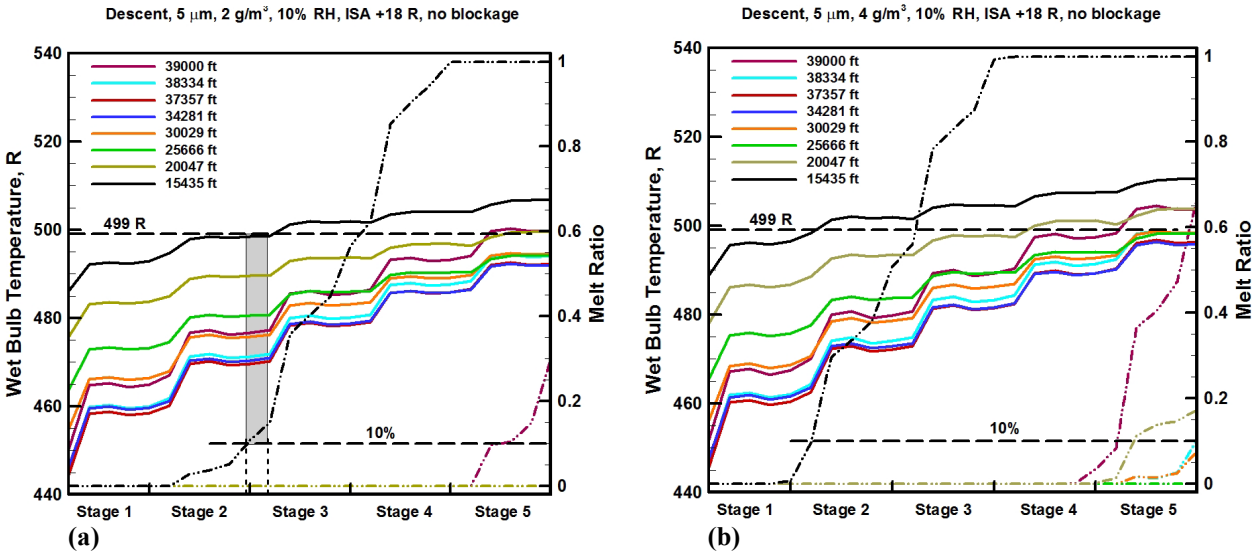


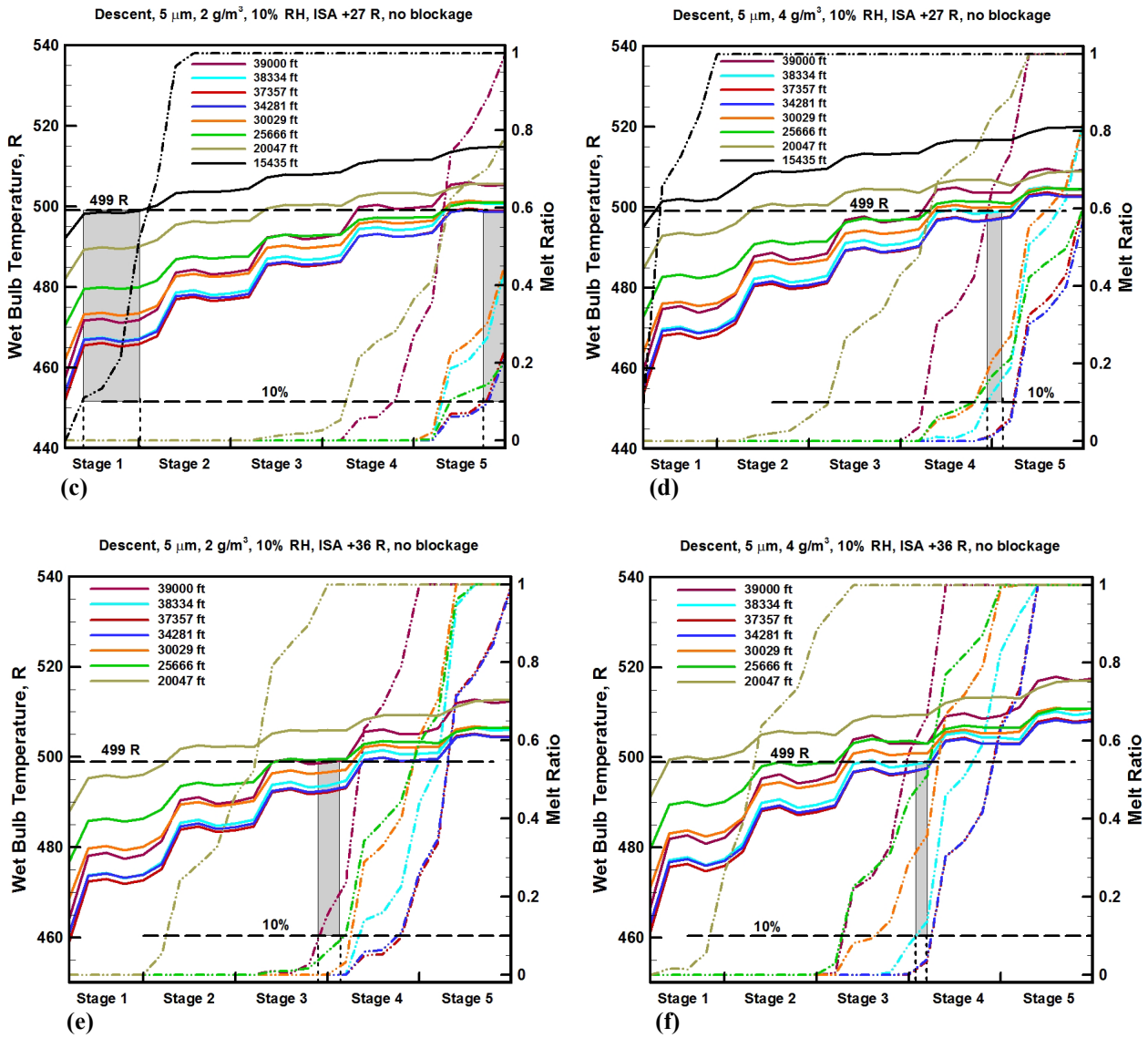
Figures 20 (a-j): The cruise condition at 39000 feet altitude, with particle sizes of 5 μm (a, b) and 10 μm (c, d) 25 μm (e, f), 50 μm (g, h), and 100 μm (i, j) and ISA temperatures offsets of +18 R (a, c, e, g, i) and +36 R (b, d, f, h, j).

The results illustrated in Figure 20(a) show that the 10% melt ratio limit is reached in the axial gap at the leading edge of the rotor between stages 3 and 4 with the 5 μm particle and ISA temperature offset of +18 R. However, the wet-bulb temperature exceeds the maximum limit of 499 R for accretion to occur. In Figure 20(b), at the engine inlet temperature of ISA +36 R, the minimum melt ratio of above 10% is achieved in the stator of stage-3, while the wet-bulb temperature exceeded the limit that would support ice accretion. In both of these cases, the melt ratio reaches the value of 1.0, indicating that the ice particle has completely melted before exiting the LPC. In Figure 20(c) with the 10 μm particle and +18 R ISA offset, the results indicate that the minimum melt ratio is achieved in the stator of stage-4. At the elevated ISA temperature of +36 R, Figure 20(d), the minimum melt ratio is reached at the leading edge of the stage-4 rotor. In both cases the wet-bulb temperature is too high to support ice accretion. In Figures 20(e) the minimum melt ratio is not reached at the lower temperature of ISA +18 R, but is reached at ISA + 36 R near the trailing edge of the stage-5 stator, as shown in Figure 20(f). However, the wet-bulb temperature is well above the limit that would support ice accretion. The results with the 50 and 100 μm ice particle sizes as illustrated in Figures 20(g, h, and i, j) show that the minimum melt ratio limit is not reached at any stage within the fan-core and LPC. Furthermore, the wet-bulb temperature at the end of the LPC is well above the maximum limit for accretion. Appendix I is a listing of the NPSS cycle analysis and Appendix J is the corresponding output listing of the compressor analysis code for the altitude cruise conditions at 39000 feet.

Descent:

The next operating points in the flight trajectory that were analyzed were computed during the descent mode from the 39000 feet cruise altitude, as shown in Figure 11. These consisted of eight altitudes starting at 39000 feet and descending to 15435 feet, at +18 R, +27 R and +36 R ISA offset temperatures at reduced engine thrust level of 10% of maximum thrust at the given altitude. As before, the ice crystal particle sizes modeled were 5, 10, 25, 50, and 100 μms in diameter. Due to the ice particle formation limits that are illustrated in Figure 14, there were seven altitudes that were analyzed at the +36 R offset temperature between 39000 feet and 20047 feet. In a more refined parametric study, it is suggested that smaller increments of altitude, particle size, ice particle concentration, relative humidity, and elevated ISA temperatures should be used. The calculated results of wet-bulb temperature and melt ratio at each computing station within the fan-core and LPC stages are illustrated in Figures 21(a-f) with an initial ice crystal particle diameter of 5 μm and IWC of 2 and 4 grams per cubic meter. Note that the analysis also included 9 g/m^3, but the results indicated no risk of ice accretion at any altitude, or ISA offset temperature.





Figures 21(a-f): Descent mode. The ice particle size used in the analyses was 5 μm. The inlet temperature specified were ISA +18R (a, b), ISA +27R (c, d), and ISA +36 R (e, f).

The results illustrated in Figure 21(a) show that the 10% melt ratio limit is reached in the stator and gap after stage-2 with the 5 μm particle and ISA +18 R at an altitude of 15435 feet. In addition, the maximum wet-bulb temperature limit criterion of 499 R is also satisfied at this location. This would indicate that there is a potential risk for ice accretion. With the same values for particle size and ISA offset temperature, the IWC is increased to 4 g/m^3. However, in this case, the melt ratio criterion is not met where the wet-bulb temperature criterion is satisfied at any of the selected operating conditions in the descent flight trajectory, as shown in Figure 21(b). As the IWC is increased, the amount water vapor in the air due to sublimation and evaporation rises resulting in an increase in relative humidity as well as the wet-bulb temperature. Therefore there is no risk of ice accretion predicted for this case. In Figure 21(c), at the engine inlet temperature of ISA +27 R, there are three altitudes where there is a risk of ice accretion during descent. The first occurs at an altitude of 37357 feet near the trailing edge section of the stage-5 stator and in the following gap. Similarly, at an altitude of 34281 feet the ice accretion risk coincides with that at 37357 feet. The altitude of 15435 feet there is an ice accretion risk predicted in the broad region of the stage-1 rotor-stator gap and through the stage-1 stator, likewise illustrated in Figure 21(c). When the IWC is increased from 2 to 4 g/m^3 the region where there is a predicted risk of ice accretion shifts to the stage-4 stator trailing edge and stator-rotor gap as illustrated in Figure 21(d). At an ISA temperature offset of +36 R and the IWC of 2 g/m^3, there is a risk of ice accretion in the stage-3 stator trailing edge and stator-rotor gap in the descent from the cruise at an altitude of

39000 feet, as shown in Figure 21(e). When the IWC is increased to 4 g/m^3, the icing region of risk is at the altitude of 38334 feet and is located in the gap between the stage-3 stator and the stage-4 rotor, as illustrated in Figure 21(f). The NPSS listings along with the corresponding compressor analysis for the descent conditions shown in Figure 21 (a-f) are provided in Appendices K and L, respectively.

As mentioned previously, the parametric study also included analyzing an ice particle size of 10 µm with IWC of 2, 4, and 9 g/m^3 at the same range of ISA offset temperatures as in the previous descent analyses. For this particle size, a risk of ice accretion during descent was found only at an altitude of 15435 feet with an IWC of 9 g/m^3 and an ISA temperature offset of +27 R. The accretion risk was located in the region of the stage-1 stator trailing edge and a portion of the gap prior to rotor-2, as illustrated in Figure 22 (details of NPSS and compressor analysis output are provided in Appendix M).

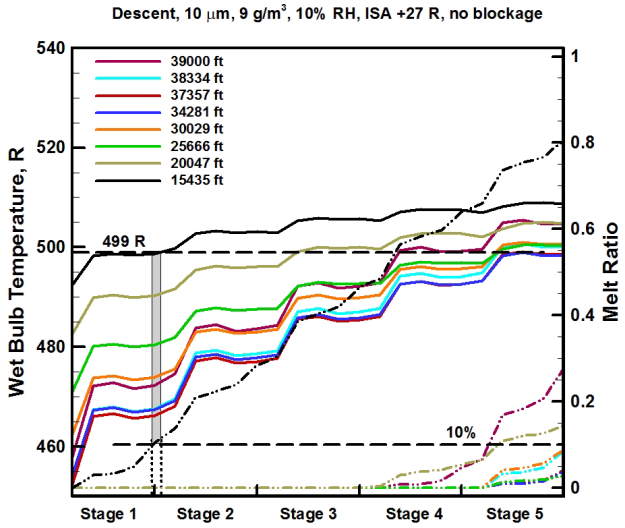
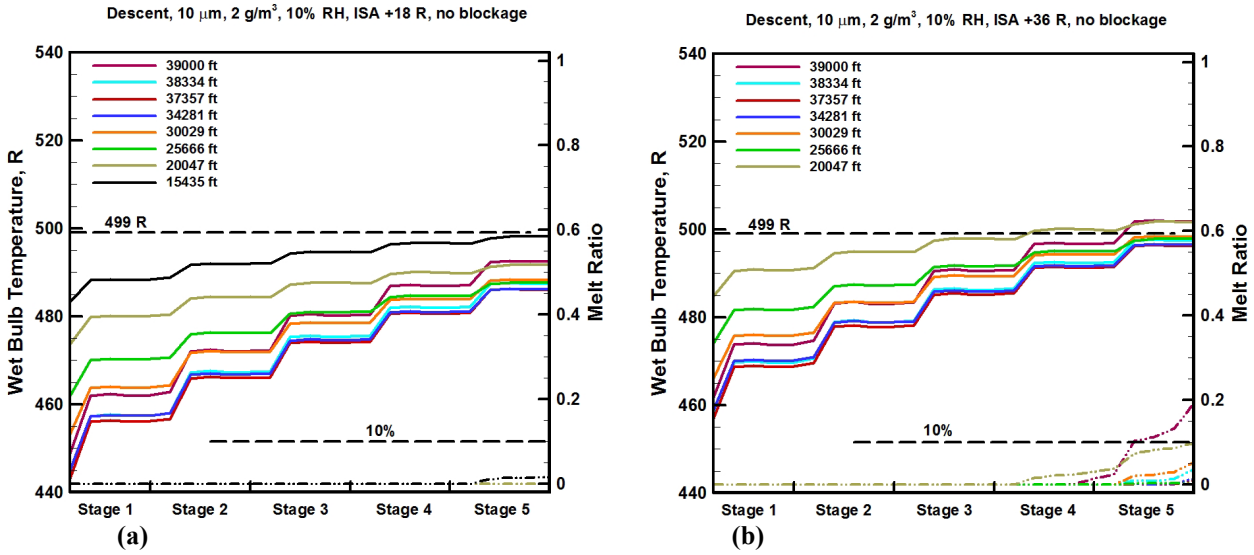
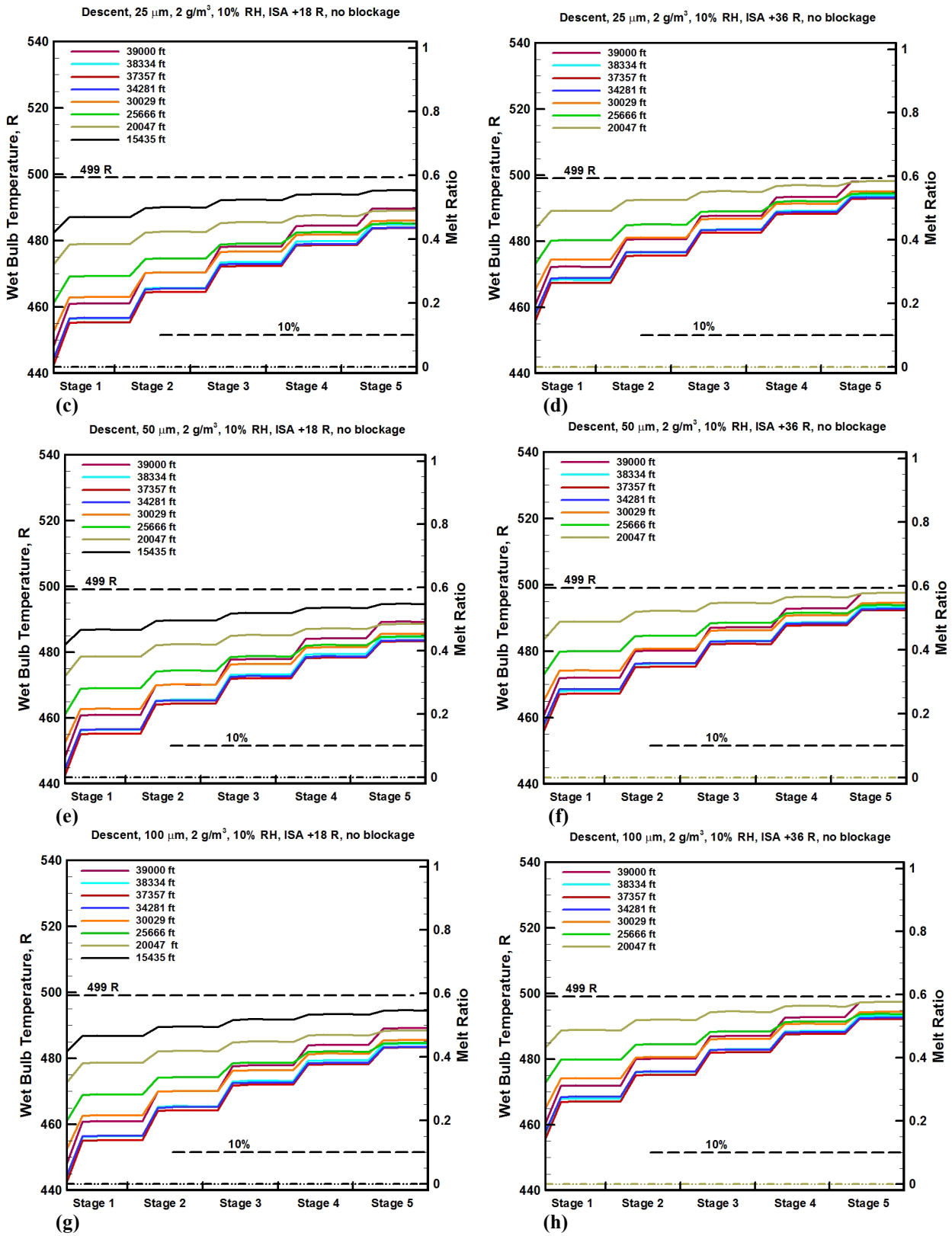


Figure 22: Descent condition, from 39000 feet to 15435 feet altitude. There is a risk of icing with an ice particle size of 10 µm and a temperature offset of ISA +27 R.

The parametric analysis of the descent mode was continued by further studying the effects of even larger particle sizes at a fixed IWC of 2 g/m^3 and at ISA offset temperatures of +18 R and +36 R. As during the cruise conditions, the particles sizes utilized to analyze the descent portion of the flight trajectory were 10, 25, 50 and 100 µm, and the results are presented in Figure 23(a-h).



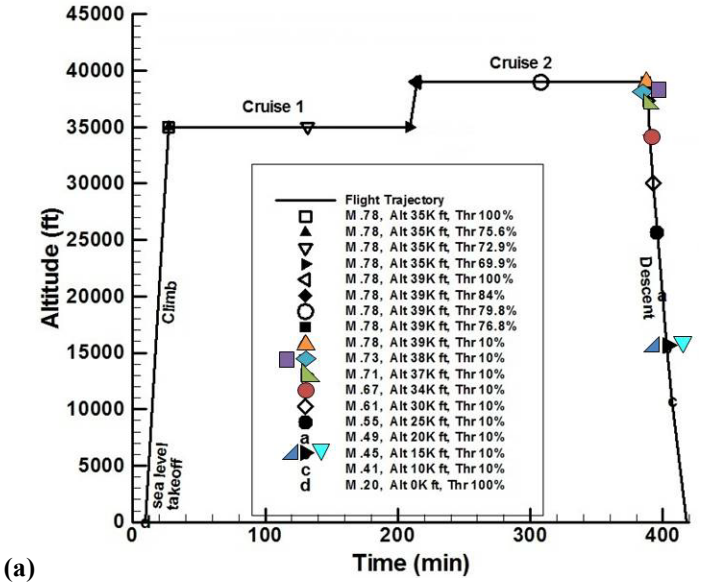


Figures 23(a-h): Descent mode, from 39000 feet to 15435 feet altitude (a, c, e, g) and 39000 feet to 20047 feet altitude (b, d, f, h). The ice particle sizes used in the analyses were: 10 μm (a, b), 25 μm (c, d), 50 μm (e, f), and 100 μm (g, h). The inlet temperature offset specified were ISA +18R (a, c, e, g) and ISA +36 R (b, d, f, h).

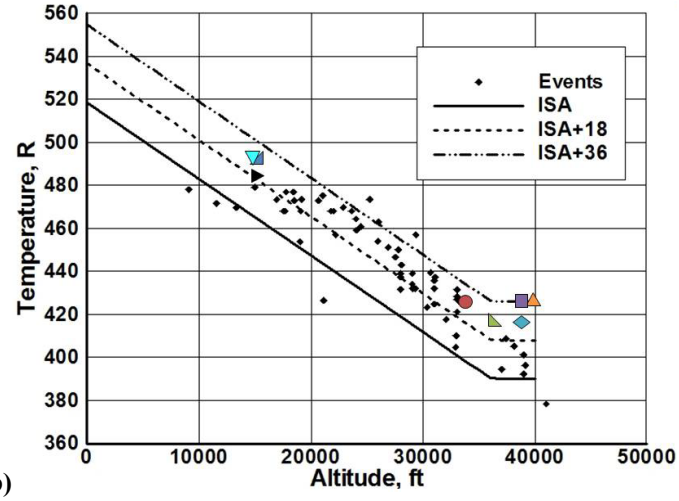
In Figures 23(a, c, e, g) with particle sizes of 10, 25, 50, and 100 μm, respectively, and an inlet temperature offset from ISA of +18 R, and an IWC of 2 g/m^3, the melt ratio was well below the criterion limit minimum of 10%. Similarly, in Figure 23(d, f, h) with the equivalent particle size and an inlet offset temperature of ISA +36 R, the melt ratio was well below the criterion limit of 10% minimum. Therefore, no risk of ice accretion was expected at these conditions. The only case where the minimum melt ratio criterion was met is the 10 μm and +36 R ISA temperature offset at the altitude of 39000 feet, in the stage-5 stator as shown in Figure 23(b). However the wet-bulb temperature there was almost 3 R above the specified maximum criterion. Therefore there was no risk of ice accretion. The NPSS listings for the descent conditions shown in Figure 23 (a-h) are provided in Appendix N with the corresponding compressor analysis detailed in Appendix O.

Summary of Engine Icing Risk Analysis:

Figures 24(a) and Table II illustrate where the risk of ice accretion was identified along the flight trajectory. Figure 24(b) shows where this notional engine may have a risk of ice accretion in comparison with the events that have been reported in the open literature. The engine events predicted in this study are also summarized in Table II. There were other conditions analyzed parametrically in this study, and the cases shown are a sample of the results to illustrate the method used to determine the icing risk based on the wet-bulb temperature and melt ratio criteria.



(a)



(b)

Figures 24(a, b): (a) Aircraft flight trajectory of the notional engine with icing risk identified at two particular operating points. (b) Icing risks of notional engine compared to known engine icing events.

Table II – Summary of Engine Icing Risk at Selected Operating Points Along Flight Trajectory

Altitude, ft	Icing Risk, Stage	Particle Size, µm	IWC, g/m^3	ISA Offset Temp, R	T_{wb}, R	T_{Static}, R	T_{Total}, R	Ref. Figure	Symbol, Figure 24(a, b)
39000	3	5	2	+ 36	498.8	521.9-524.1	529.1	20 (e)	△
38334	4	5	4	+ 27	498.4	513.9-515.8	520.1	20 (d)	◇
38334	3	5	4	+ 36	498.6	513.5-514.8	519.4	20 (f)	□
37357	5	5	2	+ 27	498.9	519.8-520.2	526.3	20 (c)	◺
34281	5	5	2	+ 27	498.7	517.6-518.0	523.9	20 (c)	○
15435	1	5	2	+ 27	498.2	510.3-512.2	517.5	20 (c)	◢
15435	2	5	2	+ 18	498.5	505.9-508.0	513.0	20 (a)	▶
15435	1	10	9	+ 27	498.7	512.2-513.0	517.4	21	▽

IV.Assumptions and Recommendations for Future Research

This study is ongoing research and is intended to be a status report on the current state of the engine icing modeling tool development effort at NASA Glenn Research Center utilizing the NPSS-COMDES-MELT analysis tool. Simple empirical models have been used that were derived from test data to determine the aero-thermodynamic conditions within the fan and low pressure compressor that identified the risk of ice accretion. Two key parameters were identified to predict whether there is a risk of ice accretion within any turbofan engine. Numerous other simplifying assumptions were made that enabled studying the very complex physics involved in engine icing due to ice crystal ingestion. The actual IWC ice crystal concentration (grams of ice per cubic meter of air) in ice clouds is currently unknown. Likewise, the actual particle size existing in the atmosphere is also unknown, and is likely larger than was assumed in this study, before entering the fan and LPC, but may be broken up into much smaller particles upon impact with the high speed rotor blades and stator vanes of the compression system. Also, there may be a particle size distribution after impact, as opposed to a particle of a single size, as was assumed in this study. There is currently research in these areas that will attempt to quantify the ice particle impact dynamics, as well as the particle size distribution after impact. Therefore in this study it was assumed that the ice particles entering the engine have already been broken up into small particles due to impact with engine components. In addition it is assumed that the small particles are evenly distributed through the bypass duct and the engine core, as well as evenly distributed in the radial direction.

The low fidelity approach was selected for this study primarily to provide a fast capability to screen engines for potential icing risk in an ice crystal environment. It would be computationally expensive to model the three phase flow through the fan and low pressure compressor with a multidisciplinary, time-dependent code that simulates the aerodynamics, thermodynamics, ice particle physics, accretion, and heat transfer analyses through the blades and end walls. Additionally finer increments of altitude, ISA offset temperatures, and ice particle size can be considered for a more refined parametric study. Ranges of particle concentrations at altitude obtained from future flight tests may reduce the need to parametrically vary IWC.

Ice accretion is not addressed in the current study, but should be considered in the future. Likewise there is no radial distribution of blockage currently available in the low fidelity approach used in this study. However, a bulk value of blockage at a specific location in the compressor is available in the code and has been previously demonstrated. Further research is necessary to model the effects of shape and roughness of the accreted ice on the surfaces of the flow path walls and stator vanes. Unusual ice shapes that accrete on the compressor stators and walls will likely have a detrimental effect on the pressure recovery and losses and the cumulative effects on the downstream compressor stages, as well as the overall power balance of the engine system. Erosion of ice due to impact of incoming ice particles on the accreted ice was likewise not considered in this study, but is a topic for future research. Another area of research may be to study the dependence of accretion on the local Mach number and particle concentration. High fidelity compressor flow simulations in the future should consider these effects. There is no data available on the accreted ice shapes in turbomachinery, as the ice shapes may likely be influenced by the unsteady air flow fluctuations between the rotors and stators. Experiments that quantify the accreted ice shapes in rotating turbomachinery need to be conducted to determine the unsteady effects on ice accretion for high fidelity flow

analysis and ice accretion code validation and calibration. These results can also be incorporated in the low fidelity modeling to improve its current capabilities.

The current study does not have an ice shedding model. Based on observed accretion behavior, the assumption in this study is that if the wet-bulb temperature is below freezing, then the ice that accretes is firm, and does not shed, but continues to grow as a function of time. Although laboratory testing has shown that there is some level of ice buildup at conditions that were at wet-bulb temperatures approximately 499 R, the ice accretion at these conditions was not firm, but was loose "slushy ice" that quickly shed before a substantial amount of ice could accrete. The current analysis was limited for this reason to wet-bulb temperatures less than or equal to 499 R. Even though this was not modeled, it is thought that the shedding of loose ice may cause a problem in the compressor by choking the downstream compressor stages due to the instantaneous addition of mass flow, thus it could possibly force the fan or other upstream stages to surge. Further research is needed in this area to study its effect on the compressor and engine system performance.

V.Conclusion

The purpose of this effort was to develop a system of codes to provide a first order predictive capability to estimate the risk of the occurrence of engine ice accretion during flight through high altitude convective ice crystal clouds. A first generation computational tool has been developed for estimating the susceptibility of engines to icing. The tool consists of an engine thermodynamic cycle model, a compressor mean line flow analysis model that calculates the aerodynamic performance of each blade row, and an ice particle sublimation, melting, and evaporation model that tracks the state of the ice/water particle through the compressor blade rows. Using this fully integrated capability, a notional turbofan engine was studied to predict the risk of ice accretion in the low pressure compressor, operating in a gas turbine engine system environment through a flight trajectory of a typical commercial aircraft. Two aero-thermodynamic parameters were identified as the criteria for determining whether there is a risk of ice accretion when flying in a high altitude ice crystal environment: the local wet-bulb temperature and the ice melt ratio. A parametric approach was utilized to determine the risk of accretion in the low pressure compressor over a range of atmospheric conditions while varying ice crystal size, ice water content, and ambient temperature. With the assumptions that were made in this study, it was determined that the notional engine would experience a risk of ice accretion at multiple operating conditions during the descent mode of the flight trajectory, with ice particle sizes on the order of 5 μm and ambient temperature offset from the ISA were in the range of +18 R to +36 R. The results of this study indicate that the risk of ice accretion on this engine occurs between 39000 – 34000 feet, and near 15000 feet. At the higher altitude near 39000 feet, the risk of accretion occurred in the rear LPC stages, while at the lower altitude near 15000 feet, the risk of accretion occurred in the front stages. All of the predicted icing risk operating points identified for this notional engine were within the envelope of the known icing events of commercial aircraft engines that have been reported in the literature.

APPENDICES

The following appendixes can be accessed from the hyperlinks below or from the bookmarks panel located on the left-hand side of this document.

A. Normalized Growth Rate as a function of LWC_m/TWC_{inj}, Figure 8.

B. Design Point Performance; compressor code output listing for the Fan-Core and LPC.

C. Vehicle Flight Trajectory (FLOPS output listing), Figure 11.

D. Overall Performance Characteristic Maps; pressure ratio, efficiency vs. flow and RPM (with baseline aerodynamic blockages), Figures 12 and 13.

E. Fan-Core and LPC Performance along Engine Operating Line, Figures 12 and 13.

F. Ice Particle Temperature and Static Air Temperature from Inlet through LPC, Figure 15.

G. NPSS cycle analysis for the altitude cruise conditions at 35000 ft, Figure 18(a) to (d) and Figure 19(a) to (d).

H. Compressor code analysis for the altitude cruise conditions at 35000 feet, Figure 18(a-d) and Figure 19(a-d).

I. NPSS cycle analysis for the altitude cruise conditions at 39000 feet, Figure 20(a-j).

J. Compressor code analysis for the altitude cruise conditions at 39000 feet, Figure 20(a-j).

K. NPSS cycle analysis for the descent conditions, Figure 21(a-f).

L. Compressor code analysis for the descent conditions, Figure 21(a-f).

M. NPSS cycle analysis and compressor code analysis for the descent conditions, Figure 22.

N. NPSS cycle analysis for the descent conditions, Figure 23(a-h).

O. Compressor code analysis for the descent conditions, Figure 23(a-h).

Nomenclature; Variable Description of COMDES Compressor Code Output

Area1	Rotor leading edge annular area, in^2
A1/A*	Ratio of annular area at the rotor leading edge to the choke area
A*	Choke area of rotor, in^2
AeroBl	Aerodynamic blockage (e.g., 0.98 = 2% blockage)
AthrRotor	Throat area of rotor, in^2
Alfa	Absolute flow angle at stator exit, degrees
Abs MACH	Absolute Mach number
Beta BLADE	Blade angle, degrees
B2 axial	Rotor exit height in axial direction, in.
BetaFlo	Relative flow angle, degrees
BetaBlade	Rotor blade angle, degrees
Beta FLO	Relative flow angle, degrees
C	Absolute velocity, ft/s
ChokeMargin	Choke margin of rotor
Cu	Tangential component of absolute velocity at rotor leading edge, ft/s
Cm	Meridional component of velocity at rotor leading edge, ft/s
C_p	Specific heat at constant pressure
CFM	Volumetric flow rate, ft^3/min
DelRCu	Angular momentum change through blade
Del Enthalpy	Enthalpy rise
Del_H/U^2	Head coefficient (Enthalpy rise / tip speed squared)

Del T	Total temperature rise, R
Deviat	Flow deviation angle from blade trailing edge, degrees
Diff Fct	Diffusion factor
DIFF LOSS	Diffuser, or stator loss coefficient
Efficiency	Efficiency, adiabatic
EffAVG	Rotor average efficiency, adiabatic
GAMMA	Ratio of specific heats (C_p / C_v).
GHP	Horsepower
Incid	Rotor leading edge incidence angle, degrees
NBLAD	Number of rotor blades
Ns	Specific speed
Ns nondim	Specific speed, non-dimensional
OPR	Overall Pressure ratio, total-to-total
PR	Stage pressure ratio, total-to-total
Pdisch	Discharge pressure, psia
Pt	Inlet total pressure, psia
Ps	Static pressure, lbf / ft^2
POTH	Potential ratio hub, absolute axial velocity at hub / axial velocity at mean radius radius (typical value can be 0.9, or 10% lower velocity at hub)
POTS	Potential ratio shroud, absolute axial velocity at tip / axial velocity at mean radius (typical value can be 1.1, or 10% higher velocity at tip)
RPM cor	Shaft rotational speed, corrected to standard temperature conditions of 518.7 R
Rel Mach	Relative Mach number
THK	Rotor blade thickness, in
R	Radius from centerline at rotor leading edge, in
R_g	Gas constant, Universal gas constant / mole weight, for air R_g = 53.35 ft-lbf / R
RPM act	Shaft rotational speed, rotations per minute
Reynolds#	Reynolds number
Slip F	Slip factor
Solidity	Solidity
SCFM	Volumetric flow rate, standard cubic feet per minute (14.7 psia, 518.7 R)
Stator	Setting angle at stator, or inlet guide vane exit, degrees
THK	Blade normal thickness, in
Tt	Inlet total temperature, degrees, R
Ts	Static temperature, R
TR	Temperature ratio, total-to-total
Texit	Total temperature at last stage exit, R
U	Blade peripheral velocity at rotor leading edge, ft/sec
U1 corrected	Rotor peripheral tip speed corrected to standard inlet temperature
W act	Mass flow rate, lb_m/s
W cor	Mass flow rate corrected to standard pressure and temperature conditions (14.7 psia, 518.7 R)
Ws1/W2	Inlet tip relative velocity / exit relative velocity
W	Relative velocity, ft/s

Subscripts

1 Rotor inlet (leading edge)
2 Rotor exit (trailing edge)
3 Radial diffuser vane inlet
4 Radial diffuser exit

Appendix A: Normalized Growth Rate as a function of LWC_m/TWC_{inj}

```
TITLE = "Normalized Growth Rate vs LWC_m/TWC_inj"
VARIABLES = "LWC_m/TWC_inj","Normalized Growth Rate(G/G_max)"
ZONE T=" M=0.2 ", I = 5.0
 0.03   0.0000
 0.22   0.1092
 0.31   0.4493
 0.31   0.2568
 0.32   0.1787
ZONE T=" M=0.25", I = 5.0
 0.14   0.0978
 0.14   0.1024
 0.15   0.1866
 0.21   0.1211
 0.21   0.0913
ZONE T=" M=0.3 ", I = 2.0
 0.04   0.0000
 0.25   0.0188
ZONE T=" Accretion Risk", I = 2.0
 0.10   0.0000
 0.10   0.5000
```

APPENDIX B: Design Point Performance; compressor code output listing for the Fan-Core and LPC.

```
**************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 12.0 ************************

     COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE           1
 RESET =  0.000 BLEED =  0.000   DPInc = 6.012   EfDer =  0.999   RH =    0.00

   W act      RPM act        Pt         Tt          POTS        POTH       AeroBl
    176.353    3776.000      15.107     522.810       1.000       1.000       0.980
W Kg/sec =   80.16045

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    172.279    3761.129       1.402       0.249      53.349      32.000       0.050

   CFM        SCFM           A1/A*      Area1        A*         AthrRotor  ChokeMargin
 135665.266  138378.281       1.657     831.557     501.715     619.754       1.235

    ROTOR LEADING EDGE CONDITIONS, STAGE            1
       R1       Stator    Alfa     C1       CU1      Cm1         M abs  U1 corrected
TIP     20.63      0.00    -0.02   420.48    -0.14   420.48      0.38   677.10
MEAN    17.06      0.00    -0.02   420.48    -0.14   420.48      0.38
HUB     12.51      0.00    -0.02   420.48    -0.14   420.48      0.38

      BetaFlo   BetaBlade Incid   U1       W1       Ps1      Ts1     TwetBulb1   M rel
TIP     58.27     50.47     7.80   679.80   799.45    13.67   508.04   489.09     0.72
MEAN    53.21     47.20     6.01   562.16   702.13    13.67   508.04   489.09     0.64
HUB     44.44     38.62     5.82   412.23   588.94    13.67   508.04   489.09     0.53

     ROTOR EXIT CONDITIONS, STAGE            1     SOLUTION IS CONVERGED
   B2 axial    THK        AeroBl     Blades2
     0.700       0.050       0.950      32.000

         R2     C2      Cu2      Cm2     Ao2          Mach2
TIP     20.63   668.44   381.63   548.79  1126.50      0.59
MEAN    18.04   703.47   422.65   562.34  1120.84      0.63
HUB     15.00   808.49   553.16   589.63  1110.61      0.73

      U2       W2       Wu2     MachRel2  DelRCu     Ws1/W2
TIP    679.80   624.55   298.16     0.55  7876.04
MEAN   594.32   587.96   171.67     0.52  7625.47     1.33
HUB    494.28   592.57    58.88     0.53  8299.19

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2  Eff2uC  Eff2incC
TIP     19.31     1.28    15.21   564.50     1.08   527.19   500.44     0.92     0.91
MEAN    19.16     1.27    14.69   563.17     1.08   521.86   497.33     0.92     0.91
HUB     19.56     1.29    13.74   566.74     1.08   512.19   491.44     0.92     0.91

        Alfa2  Beta FLO Beta BLADE Deviat   Slip F. Diff Fct Solidity  AvgRotEff
TIP     34.82    28.52    24.20     4.32     0.93     0.30     2.90
MEAN    36.93    16.98    12.70     4.28     0.93     0.25     3.51     0.91
HUB     43.17    -5.70    -9.30     3.60     0.93     0.10     4.78

     blockage3   Cor/U1    Cor/Incid
     0.950       1.000       0.999

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3
  18.0711   715.0781   421.8333   577.4023  1120.8982     0.6380    -0.0051

   Pt3         Ps3       Ts3       TwetBulb3   Vane#      FloAlpha3  VaneAlpha3  Incid3
  19.2960    14.6681   522.0970   497.4292    24.0000    36.1508    35.4000    -0.7508

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th
  18.0711   598.5550   421.8333   732.2645  1134.5392     0.5276     0.2817

  BlockageTh  PtTh      PsTh      TsTh       TwetBulbTh  AreaTh     w2-Th     DiffFact4
   0.9500    19.2234    15.8993   534.8818   504.7196   528.7961     0.0251     0.4304

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4
  18.0829   548.0781     0.0000   548.0781  1139.6547     0.4809     0.3498

  Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
   0.9500    16.3457   539.7160   507.3303     0.0000     0.0600     0.0399     0.3748

   STAGE EXIT CONDITIONS, STAGE            1
   Eff4      Pt4          PR4      Texit       Del T     Ns        Ns nondim
   0.8765    19.1525     1.2678   564.8056    41.9956   217.3922     1.6852

  Del Enthalpy   Del_H/U^2    GHP      Reynolds#
 261458.922       0.566    2605.665    1768070.250
```

```
    COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE           2
 RESET =  0.000 BLEED =  0.000   DPInc = 6.012   EfDer =  1.000   RH =  100.00

   W act      RPM act        Pt         Tt          POTS        POTH       AeroBl
    176.353    3776.000      19.153     564.806      1.000       1.000       0.980
W Kg/sec =   80.16045

   W cor      RPM cor        GAMMA       Cp         R           Blades       THK
    141.243    3618.600       1.402      0.249      53.349      56.000       0.050

   CFM        SCFM           A1/A*      Area1       A*         AthrRotor  ChokeMargin
 135665.266  138378.281       1.436     590.487     411.342     474.134       1.153

    ROTOR LEADING EDGE CONDITIONS, STAGE            2

       R1      Stator    Alfa     C1      CU1      Cm1         M abs  U1 corrected
TIP     20.55     0.00    -0.02   520.10    -0.18   520.10     0.46   648.91
MEAN    18.08     0.00    -0.02   520.10    -0.18   520.10     0.46
HUB     15.21     0.00    -0.02   520.10    -0.18   520.10     0.46

      BetaFlo   BetaBlade Incid   U1       W1       Ps1      Ts1     TwetBulb1   M rel
TIP     52.48    46.36     6.12   677.16   853.98    16.61   542.22   542.22     0.75
MEAN    48.89    42.30     6.59   595.71   790.94    16.61   542.22   542.22     0.69
HUB     43.95    37.84     6.11   501.20   722.41    16.61   542.22   542.22     0.63

     ROTOR EXIT CONDITIONS, STAGE             2     SOLUTION IS CONVERGED
   B2 axial    THK        AeroBl     Blades2
     0.500       0.050       0.950      56.000

         R2     C2      Cu2      Cm2     Ao2          Mach2
TIP     20.42   599.80   307.48   514.99  1169.13      0.51
MEAN    18.01   614.66   321.99   523.58  1164.97      0.53
HUB     15.22   668.79   403.63   533.26  1160.89      0.58

      U2       W2       Wu2     MachRel2  DelRCu     Ws1/W2
TIP    672.88   631.45   365.40     0.54  6282.35
MEAN   593.46   589.77   271.47     0.51  5802.28     1.45
HUB    501.63   542.19    97.99     0.47  6147.23

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2  Eff2uC  Eff2incC
TIP     23.00     1.20    19.21   598.04     1.06   568.00   568.00     0.92     0.91
MEAN    22.69     1.18    18.76   595.50     1.05   563.96   563.96     0.92     0.91
HUB     22.91     1.20    18.29   597.33     1.06   559.99   559.99     0.92     0.91

        Alfa2  Beta FLO Beta BLADE Deviat   Slip F. Diff Fct Solidity  AvgRotEff
TIP     30.84    35.36    31.50     3.86     0.93     0.32     2.90
MEAN    31.59    27.41    23.50     3.91     0.93     0.32     3.30     0.91
HUB     37.12    10.41     6.50     3.91     0.93     0.32     3.92

  blockage3   Cor/U1    Cor/Incid
     0.950       1.000       1.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3
  17.9595   622.9638   322.8948   532.7503  1165.5101     0.5345     0.0054

   Pt3        Ps3       Ts3       TwetBulb3   Vane#      FloAlpha3  VaneAlpha3  Incid3
  22.8224    18.7846   564.5516   564.5516    46.0000    31.2196    30.6000    -0.6196

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th
  17.9595   533.7812   322.8948   623.8456  1174.3680     0.4545     0.2457

  BlockageTh  PtTh      PsTh      TsTh       TwetBulbTh  AreaTh     w2-Th     DiffFact4
   0.9500    22.7771    19.7642   573.1653   573.1653   511.1510     0.0210     0.3283

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4
  17.8235   526.5400     0.0000   526.5400  1175.0248     0.4481     0.2436

  Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
   0.9500    19.7853   573.8065   573.8065     0.0000     0.0600     0.0367     0.2508

   STAGE EXIT CONDITIONS, STAGE            2
   Eff4      Pt4         PR4      Texit       Del T     Ns        Ns nondim
   0.8798    22.7126     1.1859   596.9559    32.1503   248.8247     1.9289

Del Enthalpy   Del_H/U^2    GHP      Reynolds#
 200283.328       0.442    1995.997 1593531.250
```

```
    COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE           3
 RESET =  0.000 BLEED =  0.000   DPInc = 6.012   EfDer =  1.000   RH =  100.00

   W act      RPM act        Pt         Tt          POTS        POTH       AeroBl
    176.353    3776.000      22.713     596.956      1.000       1.000       0.980
W Kg/sec =   80.16045

   W cor      RPM cor        GAMMA       Cp         R           Blades       THK
    122.447    3519.808       1.402      0.249      53.349      56.000       0.050

   CFM        SCFM           A1/A*      Area1       A*         AthrRotor  ChokeMargin
 135665.266  138378.281       1.530     545.479     356.621     429.765       1.205

    ROTOR LEADING EDGE CONDITIONS, STAGE            3

       R1      Stator    Alfa     C1      CU1      Cm1         M abs  U1 corrected
TIP     20.07     0.00    -0.02   494.31    -0.17   494.31     0.42   616.45
MEAN    17.74     0.00    -0.02   494.31    -0.17   494.31     0.42
HUB     15.05     0.00    -0.02   494.31    -0.17   494.31     0.42

      BetaFlo   BetaBlade Incid   U1       W1       Ps1      Ts1     TwetBulb1   M rel
TIP     53.23    46.36     6.87   661.34   825.80    20.12   576.56   576.56     0.70
MEAN    49.79    43.40     6.39   584.52   765.64    20.12   576.56   576.56     0.65
HUB     45.10    38.84     6.26   495.92   700.32    20.12   576.56   576.56     0.59

     ROTOR EXIT CONDITIONS, STAGE            3     SOLUTION IS CONVERGED
   B2 axial    THK        AeroBl     Blades2
     0.500       0.050       0.950      56.000

        R2     C2      Cu2      Cm2     Ao2         Mach2
TIP     19.81   578.30   301.72   493.36  1202.15     0.48
MEAN    17.51   592.00   316.36   500.38  1198.49     0.49
HUB     14.85   643.66   394.80   508.36  1194.87     0.54

      U2       W2       Wu2     MachRel2  DelRCu     Ws1/W2
TIP    652.78   605.51   351.06     0.50  5980.44
MEAN   576.87   564.13   260.52     0.47  5541.31     1.47
HUB    489.33   517.07    94.53     0.43  5865.40

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2  Eff2uC  Eff2incC
TIP     26.79     1.18    22.86   628.57     1.05   600.66   600.66     0.92     0.91
MEAN    26.47     1.17    22.40   626.25     1.05   597.00   597.00     0.92     0.91
HUB     26.71     1.18    21.92   627.97     1.05   593.39   593.39     0.92     0.91

        Alfa2  Beta FLO Beta BLADE Deviat   Slip F. Diff Fct Solidity  AvgRotEff
TIP     31.45    35.43    31.50     3.93     0.93     0.33     2.90
MEAN    32.30    27.50    23.50     4.00     0.93     0.33     3.28     0.91
HUB     37.83    10.53     6.50     4.03     0.93     0.33     3.87

  blockage3   Cor/U1    Cor/Incid
     0.950       1.000       1.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3
  17.3924   597.9450   318.4314   506.1024  1199.2048     0.4986     0.0115

   Pt3        Ps3       Ts3       TwetBulb3   Vane#      FloAlpha3  VaneAlpha3  Incid3
  26.6147    22.4534   597.7551   597.7551    46.0000    32.1774    31.5000    -0.6774

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th
  17.3924   514.7593   318.4314   605.2898  1206.9297     0.4265     0.2467

  BlockageTh  PtTh      PsTh      TsTh       TwetBulbTh  AreaTh     w2-Th     DiffFact4
   0.9500    26.5737    23.4463   605.4810   605.4810   471.9919     0.0196     0.3444

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4
  17.1214   498.8988     0.0000   498.8988  1208.2664     0.4129     0.2604

  Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
   0.9500    23.5633   606.8229   606.8229     0.0000     0.0600     0.0368     0.2741

   STAGE EXIT CONDITIONS, STAGE            3
   Eff4      Pt4          PR4      Texit       Del T     Ns        Ns nondim
   0.8804    26.5007     1.1668   627.5978    30.6420   241.5946     1.8728

Del Enthalpy   Del_H/U^2    GHP      Reynolds#
 191004.031       0.448    1903.521 1533169.125
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    COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE           4
 RESET =  0.000 BLEED =  0.000   DPInc = 6.012   EfDer =  1.000   RH =  100.00

   W act      RPM act        Pt         Tt          POTS        POTH       AeroBl
    176.353    3776.000      26.501     627.598      1.000       1.000       0.980
W Kg/sec =   80.16045

   W cor      RPM cor        GAMMA       Cp         R           Blades       THK
    107.603    3432.807       1.401      0.249      53.349      56.000       0.050

   CFM        SCFM           A1/A*      Area1       A*         AthrRotor  ChokeMargin
 135665.266  138378.281       1.638     513.330     313.412     401.059       1.280

    ROTOR LEADING EDGE CONDITIONS, STAGE            4

       R1      Stator    Alfa     C1      CU1      Cm1         M abs  U1 corrected
 TIP     19.26     0.00    -0.02   467.07    -0.16   467.07     0.39   576.95
 MEAN    16.97     0.00    -0.02   467.07    -0.16   467.07     0.39
 HUB     14.32     0.00    -0.02   467.07    -0.16   467.07     0.39

      BetaFlo   BetaBlade Incid   U1       W1       Ps1      Ts1     TwetBulb1   M rel
 TIP     53.66    46.36     7.30   634.65   788.13    23.91   609.40   609.40     0.65
 MEAN    50.14    43.80     6.34   559.22   728.74    23.91   609.40   609.40     0.60
 HUB     45.30    37.84     7.46   471.87   664.06    23.91   609.40   609.40     0.55

     ROTOR EXIT CONDITIONS, STAGE            4     SOLUTION IS CONVERGED
   B2 axial    THK        AeroBl     Blades2
     0.500       0.050       0.950      56.000

         R2      C2      Cu2      Cm2     Ao2          Mach2
 TIP     18.88   549.86   288.91   467.84  1232.20      0.45
 MEAN    16.57   560.60   299.29   474.02  1228.68      0.46
 HUB     13.89   605.97   368.58   480.98  1225.18      0.49

      U2       W2       Wu2     MachRel2  DelRCu     Ws1/W2
 TIP    622.13   574.38   333.22     0.47  5457.75
 MEAN   546.14   534.45   246.85     0.43  4963.05     1.48
 HUB    457.70   489.16    89.12     0.40  5121.93

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2  Eff2uC  Eff2incC
 TIP     30.60     1.15    26.68   656.43     1.05   631.21   631.21     0.92     0.91
 MEAN    30.21     1.14    26.19   653.82     1.04   627.60   627.60     0.92     0.91
 HUB     30.33     1.14    25.66   654.66     1.04   624.03   624.03     0.92     0.91

        Alfa2  Beta FLO Beta BLADE Deviat   Slip F. Diff Fct Solidity  AvgRotEff
 TIP     31.70    35.46    31.50     3.96     0.93     0.33     2.90
 MEAN    32.27    27.51    23.50     4.01     0.93     0.33     3.29     0.91
 HUB     37.46    10.50     6.50     4.00     0.93     0.33     3.90


  blockage3   Cor/U1    Cor/Incid
     0.950       1.000       1.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3
  16.4812   552.7786   300.9688   463.6615  1230.4952     0.4492     0.0535

   Pt3        Ps3       Ts3       TwetBulb3   Vane#      FloAlpha3  VaneAlpha3  Incid3
  30.3375    26.4107   629.4775   629.4775    46.0000    32.9881    32.4000    -0.5881

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th
  16.4812   479.6051   300.9688   566.2184  1236.6398     0.3878     0.2712

  BlockageTh  PtTh      PsTh      TsTh       TwetBulbTh  AreaTh     w2-Th     DiffFact4
   0.9500    30.3053    27.3165   635.7798   635.7798   456.5731     0.0177     0.3598

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4
  16.0960   455.1656     0.0000   455.1656  1238.4919     0.3675     0.2665

  Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
   0.9500    27.5306   637.6857   637.6857     0.0000     0.0600     0.0367     0.3221

   STAGE EXIT CONDITIONS, STAGE            4
   Eff4      Pt4          PR4      Texit       Del T     Ns        Ns nondim
   0.8800    30.2252     1.1405   654.9698    27.3719   247.8075     1.9210

Del Enthalpy   Del_H/U^2    GHP      Reynolds#
 170742.469       0.441    1701.597 1524277.375
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    COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE           5
 RESET =  0.000 BLEED =  0.000   DPInc = 6.012   EfDer =  1.000   RH =  100.00

   W act      RPM act        Pt         Tt          POTS        POTH       AeroBl
    176.353    3776.000      30.225     654.970      1.000       1.000       0.980
W Kg/sec =   80.16045

   W cor      RPM cor        GAMMA       Cp         R           Blades       THK
    96.379    3360.311       1.401       0.249      53.349      56.000       0.050

   CFM        SCFM           A1/A*      Area1       A*         AthrRotor  ChokeMargin
 135665.266  138378.281       1.815     509.668     280.740     390.276       1.390

    ROTOR LEADING EDGE CONDITIONS, STAGE             5

       R1      Stator    Alfa     C1      CU1      Cm1         M abs  U1 corrected
TIP     18.32     0.00    -0.02   423.76    -0.15   423.76     0.34   537.20
MEAN    15.91     0.00    -0.02   423.76    -0.15   423.76     0.34
HUB     13.07     0.00    -0.02   423.76    -0.15   423.76     0.34

      BetaFlo   BetaBlade Incid   U1       W1       Ps1      Ts1     TwetBulb1   M rel
TIP     54.94    47.36     7.58   603.68   737.68    27.88   640.00   640.00     0.59
MEAN    51.06    44.80     6.26   524.36   674.30    27.88   640.00   640.00     0.54
HUB     45.47    38.84     6.63   430.68   604.31    27.88   640.00   640.00     0.49

     ROTOR EXIT CONDITIONS, STAGE             5     SOLUTION IS CONVERGED
   B2 axial    THK        AeroBl     Blades2
     0.500       0.050       0.950      56.000

         R2     C2      Cu2      Cm2     Ao2          Mach2
TIP     17.94   513.60   284.99   427.28  1259.83     0.41
MEAN    15.50   518.15   284.04   433.36  1255.87     0.41
HUB     12.59   552.12   333.53   439.99  1251.93     0.44

      U2       W2       Wu2     MachRel2  DelRCu     Ws1/W2
TIP    591.16   525.65   306.17     0.42  5115.32
MEAN   510.67   489.04   226.63     0.39  4404.31     1.51
HUB    414.86   447.44    81.33     0.36  4201.11

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2  Eff2uC  Eff2incC
TIP     34.40     1.14    30.68   681.97     1.04   659.98   659.98     0.92     0.91
MEAN    33.79     1.12    30.06   678.22     1.04   655.84   655.84     0.92     0.91
HUB     33.62     1.11    29.42   677.15     1.03   651.73   651.73     0.92     0.91

        Alfa2  Beta FLO Beta BLADE Deviat   Slip F. Diff Fct Solidity  AvgRotEff
TIP     33.70    35.62    31.50     4.12     0.93     0.35     2.90
MEAN    33.24    27.61    23.50     4.11     0.93     0.34     3.34     0.91
HUB     37.16    10.47     6.50     3.97     0.93     0.33     4.06

  blockage3   Cor/U1    Cor/Incid
     0.950       1.000       1.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3
  15.2185   524.1179  289.2517  437.0733  1256.2159     0.4172    -0.0050

   Pt3        Ps3       Ts3       TwetBulb3   Vane#      FloAlpha3  VaneAlpha3  Incid3
  33.8612    30.0364   656.2099  656.2098    46.0000    33.4963    33.0000    -0.4963

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th
  15.2185   457.4107  289.2517  541.1941  1261.4308     0.3626     0.2117

  BlockageTh  PtTh      PsTh      TsTh       TwetBulbTh  AreaTh     w2-Th     DiffFact4
   0.9500    33.8114   30.8730   661.6694   661.6694   440.8271     0.0328     0.3714

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4
  14.7013   427.1457     0.0000   427.1457  1263.5568     0.3381     0.3055

  Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
   0.9500    31.2244   663.9016   663.9015     0.0000     0.0600     0.0367     0.3021

   STAGE EXIT CONDITIONS, STAGE             5
   Eff4      Pt4          PR4      Texit       Del T     Ns        Ns nondim
   0.8811    33.7963     1.1181   679.1149    24.1451   258.2498     2.0019

Del Enthalpy   Del_H/U^2    GHP      Reynolds#
 150727.172       0.431    1502.127 1555663.750

  OVERALL EXIT CONDITIONS; ALL           5   STAGES

 Del Enthalpy   GHP        MassFloS1cor  OPR      Efficiency      Rotor1Inc   TR
   974215.94   9708.9072    172.2792      2.2371      0.8686      6.0120      1.2990
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APPENDIX C: Vehicle Flight Trajectory (FLOPS output listing)

SEGMENT 1 CLIMB

WEIGHT	ALTITUDE ENERGY	MACH NO. VELOCITY	DELTA T TIME	DELTA D DIST	DELTA F FUEL	THRUST T/TMAX	FUEL FLOW SFC	EX POW DH/DT*	CLIFT CDRAG	LIFT DRAG	L/D SP RANGE	Q NOX	PCODE ENG PAR
172183.	0.	0.3000	0.00	0.0	0.	38219.	19137.	3205.2	0.93275	172183.	16.006	133.3	1
	1743.	198.44	9.64	0.0	526.	1.00000	0.50072	2047.8	0.05828	10757.	0.01037	0.0	28.231
172053.	839.	0.3467	0.41	1.5	130.	36279.	18935.	3685.2	0.71920	172053.	19.327	172.8	1
	3154.	228.70	10.05	1.5	655.	1.00000	0.52194	2047.8	0.03721	8902.	0.01208	3.3	28.385
171961.	1500.	0.3799	0.29	1.2	92.	35174.	18824.	3935.6	0.61342	171961.	20.370	202.5	1
	4267.	250.00	10.34	2.6	747.	1.00000	0.53517	2264.9	0.03011	8442.	0.01328	5.7	28.570
171847.	2922.	0.3818	0.37	1.5	114.	34151.	18246.	3772.3	0.63946	171847.	20.110	194.1	1
	5688.	250.00	10.71	4.1	861.	1.00000	0.53427	3853.9	0.03180	8545.	0.01370	8.6	28.025
171732.	4343.	0.3837	0.39	1.6	115.	33128.	17666.	3605.3	0.66687	171732.	19.803	186.0	1
	7110.	250.00	11.10	5.7	977.	1.00000	0.53328	3688.8	0.03367	8672.	0.01415	11.5	27.465
171615.	5765.	0.3857	0.40	1.7	117.	32118.	17122.	3441.6	0.69575	171615.	19.525	178.1	1
	8531.	250.00	11.50	7.4	1094.	1.00000	0.53308	3523.5	0.03563	8790.	0.01460	14.4	26.962
171496.	7186.	0.3876	0.42	1.7	119.	31120.	16606.	3274.5	0.72618	171496.	19.185	170.6	1
	9953.	250.00	11.92	9.1	1213.	1.00000	0.53361	3358.0	0.03785	8939.	0.01505	17.3	26.506
171374.	8608.	0.3896	0.45	1.8	121.	30123.	16089.	3102.4	0.75827	171374.	18.787	163.2	1
	11374.	250.00	12.37	11.0	1334.	1.00000	0.53411	3188.5	0.04036	9122.	0.01554	20.2	26.047
171252.	10000.	0.3916	0.46	1.9	122.	29145.	15580.	2929.3	0.79141	171252.	18.354	156.3	1
	12767.	250.00	12.83	12.9	1456.	1.00000	0.53457	3015.8	0.04312	9331.	0.01605	23.1	25.593
171103.	10000.	0.5060	0.57	2.7	149.	27729.	16107.	3624.8	0.47370	171103.	19.516	260.9	1
	14619.	323.00	13.40	15.6	1605.	1.00000	0.58087	0.0	0.02427	8767.	0.02005	26.6	26.792
170999.	11212.	0.5187	0.39	2.1	104.	26853.	15718.	3527.8	0.47234	170999.	19.477	261.5	1
	16021.	329.60	13.79	17.7	1709.	1.00000	0.58533	3090.0	0.02425	8779.	0.02097	29.1	26.429
170895.	12423.	0.5312	0.40	2.2	104.	25987.	15322.	3425.2	0.47190	170895.	19.446	261.6	1
	17423.	336.07	14.19	19.9	1813.	1.00000	0.58961	3003.8	0.02427	8788.	0.02193	31.6	26.046
170790.	13635.	0.5438	0.42	2.3	105.	25132.	14920.	3317.1	0.47230	170790.	19.421	261.2	1
	18826.	342.42	14.61	22.3	1918.	1.00000	0.59368	2912.8	0.02432	8794.	0.02295	34.1	25.644
170685.	14847.	0.5562	0.43	2.5	105.	24278.	14504.	3202.4	0.47351	170685.	19.402	260.3	1
	20228.	348.65	15.04	24.7	2024.	1.00000	0.59739	2816.5	0.02441	8797.	0.02404	36.5	25.207
170578.	16059.	0.5686	0.44	2.6	106.	23705.	14330.	3139.6	0.47549	170578.	19.388	259.1	1
	21631.	354.78	15.48	27.3	2130.	1.00000	0.60454	2739.8	0.02452	8798.	0.02476	38.9	25.445
170471.	17270.	0.5810	0.45	2.7	107.	23224.	14223.	3092.2	0.47820	170471.	19.378	257.5	1
	23033.	360.79	15.93	30.0	2237.	1.00000	0.61243	2692.3	0.02468	8797.	0.02537	41.3	25.877
170363.	18482.	0.5933	0.46	2.8	108.	22809.	14156.	3055.0	0.48164	170363.	19.373	255.5	1
	24435.	366.72	16.39	32.8	2345.	1.00000	0.62063	2655.7	0.02486	8794.	0.02591	43.8	26.432
170227.	20000.	0.6088	0.58	3.6	136.	22385.	14134.	3024.4	0.48694	170227.	19.362	252.5	1
	26192.	374.00	16.96	36.3	2481.	1.00000	0.63141	2626.4	0.02515	8792.	0.02646	47.0	27.339
170119.	21112.	0.6243	0.47	2.9	108.	21476.	13663.	2875.4	0.48475	170119.	19.272	253.5	1
	27567.	381.88	17.43	39.3	2589.	1.00000	0.63618	2384.6	0.02515	8827.	0.02795	49.4	26.515
170009.	22223.	0.6398	0.49	3.2	110.	20569.	13176.	2716.6	0.48353	170009.	19.182	253.9	1
	28943.	389.59	17.92	42.4	2699.	1.00000	0.64059	2260.2	0.02521	8863.	0.02957	51.9	25.609
169897.	23335.	0.6552	0.52	3.4	113.	19674.	12684.	2551.0	0.48322	169897.	19.093	253.9	1
	30318.	397.16	18.44	45.8	2812.	1.00000	0.64468	2129.1	0.02531	8898.	0.03131	54.3	24.656
169781.	24446.	0.6705	0.56	3.7	116.	18801.	12192.	2381.3	0.48375	169781.	19.006	253.5	1
	31693.	404.58	19.00	49.6	2927.	1.00000	0.64847	1993.6	0.02545	8933.	0.03318	56.8	23.680
169662.	25558.	0.6857	0.60	4.1	119.	17993.	11740.	2219.0	0.48508	169662.	18.920	252.6	1
	33068.	411.87	19.60	53.6	3047.	1.00000	0.65245	1859.3	0.02564	8967.	0.03508	59.2	22.833
169538.	26670.	0.7009	0.64	4.4	123.	17249.	11328.	2064.7	0.48718	169538.	18.837	251.3	1
	34443.	419.04	20.24	58.1	3170.	1.00000	0.65674	1731.4	0.02586	9000.	0.03699	61.6	22.136
169410.	27781.	0.7160	0.69	4.9	128.	16516.	10917.	1906.8	0.49002	169410.	18.762	249.7	1
	35818.	426.08	20.93	62.9	3298.	1.00000	0.66098	1605.2	0.02612	9029.	0.03903	64.1	21.433
169275.	28893.	0.7311	0.75	5.4	134.	15778.	10488.	1741.0	0.49357	169275.	18.691	247.7	1
	37193.	433.01	21.69	68.3	3433.	1.00000	0.66475	1474.4	0.02641	9057.	0.04129	66.6	20.642
169133.	30004.	0.7462	0.83	6.0	142.	15035.	10043.	1567.8	0.49781	169133.	18.623	245.4	1
	38568.	439.83	22.52	74.4	3575.	1.00000	0.66800	1337.4	0.02673	9082.	0.04379	69.1	19.767
168981.	31116.	0.7613	0.92	6.8	152.	14382.	9689.	1406.8	0.50273	168981.	18.519	242.8	1
	39944.	446.55	23.44	81.2	3727.	1.00000	0.67368	1202.3	0.02715	9125.	0.04609	71.7	19.255
168773.	32702.	0.7720	1.33	10.0	208.	13378.	9056.	1160.4	0.52525	168773.	18.592	232.1	1
	41656.	449.73	24.78	91.2	3935.	1.00000	0.67691	1189.0	0.02825	9078.	0.04966	75.2	18.196

168607.	33909.	0.7762	1.13	8.5	166.	12586.	8526.	966.3	0.54923	168607.	18.717	221.7	1
	42862.	449.73	25.91	99.7	4102.	1.00000	0.67741	1063.3	0.02934	9008.	0.05275	77.9	17.264
168434.	35000.	0.7800	1.25	9.4	172.	11868.	8043.	781.7	0.57203	168434.	18.764	212.7	1
	43954.	449.73	27.16	109.0	4274.	1.00000	0.67770	874.0	0.03049	8977.	0.05592	80.5	16.404

SEGMENT 2 CRUISE

WEIGHT	ALTITUDE	MACH NO.	DELTA T	DELTA D	DELTA F	THRUST	FUEL FLOW	EX POW	CLIFT	LIFT	L/D	Q	PCODE
	ENERGY	VELOCITY	TIME	DIST	FUEL	T/TMAX	SFC	DH/DT*	CDRAG	DRAG	SP RANGE	NOX	ENG PAR
168434.	35000.	0.7800	0.00	0.0	0.	8977.	5889.	781.7	0.57203	168434.	18.764	212.7	1
	43954.	449.73	27.16	109.0	4274.	0.75639	0.65601	0.0	0.03049	8977.	0.07637	80.5	12.730
168000.	35000.	0.7800	4.42	33.2	434.	8958.	5876.	788.8	0.57055	168000.	18.755	212.7	1
	43954.	449.73	31.59	142.2	4708.	0.75480	0.65598	0.0	0.03042	8958.	0.07654	86.1	12.713
166400.	35000.	0.7800	16.40	122.9	1600.	8889.	5830.	815.2	0.56512	166400.	18.720	212.7	1
	43954.	449.73	47.99	265.1	6308.	0.74901	0.65587	0.0	0.03019	8889.	0.07714	106.4	12.650
164800.	35000.	0.7800	16.53	123.9	1600.	8821.	5785.	841.8	0.55968	164800.	18.682	212.7	1
	43954.	449.73	64.52	389.0	7908.	0.74332	0.65576	0.0	0.02996	8821.	0.07774	126.5	12.588
163200.	35000.	0.7800	16.66	124.9	1600.	8755.	5740.	868.6	0.55425	163200.	18.641	212.7	1
	43954.	449.73	81.18	513.9	9508.	0.73773	0.65565	0.0	0.02973	8755.	0.07835	146.6	12.528
161600.	35000.	0.7800	16.78	125.8	1600.	8690.	5699.	895.4	0.54882	161600.	18.595	212.7	1
	43954.	449.73	97.96	639.7	11108.	0.73227	0.65575	0.0	0.02951	8690.	0.07892	166.6	12.472
160000.	35000.	0.7800	16.90	126.7	1600.	8628.	5661.	922.1	0.54338	160000.	18.544	212.7	1
	43954.	449.73	114.86	766.4	12708.	0.72704	0.65609	0.0	0.02930	8628.	0.07944	186.6	12.424
158400.	35000.	0.7800	17.01	127.5	1600.	8567.	5624.	949.0	0.53795	158400.	18.490	212.7	1
	43954.	449.73	131.88	893.9	14308.	0.72187	0.65643	0.0	0.02909	8567.	0.07997	206.4	12.376
156800.	35000.	0.7800	17.13	128.4	1600.	8506.	5587.	976.4	0.53252	156800.	18.434	212.7	1
	43954.	449.73	149.01	1022.3	15908.	0.71675	0.65677	0.0	0.02889	8506.	0.08050	226.2	12.329
155200.	35000.	0.7800	17.24	129.2	1600.	8446.	5550.	1004.1	0.52708	155200.	18.376	212.7	1
	43954.	449.73	166.25	1151.5	17508.	0.71168	0.65712	0.0	0.02868	8446.	0.08103	245.8	12.283
153600.	35000.	0.7800	17.35	130.1	1600.	8386.	5514.	1032.2	0.52165	153600.	18.315	212.7	1
	43954.	449.73	183.60	1281.6	19108.	0.70667	0.65746	0.0	0.02848	8386.	0.08156	265.5	12.236
152000.	35000.	0.7800	17.47	130.9	1600.	8328.	5478.	1060.7	0.51621	152000.	18.252	212.7	1
	43954.	449.73	201.07	1412.5	20708.	0.70171	0.65781	0.0	0.02828	8328.	0.08210	285.0	12.191
151276.	35000.	0.7800	7.94	59.6	724.	8301.	5462.	1073.7	0.51375	151276.	18.223	212.7	1
	43954.	449.73	209.01	1472.1	21432.	0.69949	0.65796	0.0	0.02819	8301.	0.08234	293.8	12.170

SEGMENT 3 CLIMB

WEIGHT	ALTITUDE	MACH NO.	DELTA T	DELTA D	DELTA F	THRUST	FUEL FLOW	EX POW	CLIFT	LIFT	L/D	Q	PCODE
	ENERGY	VELOCITY	TIME	DIST	FUEL	T/TMAX	SFC	DH/DT*	CDRAG	DRAG	SP RANGE	NOX	ENG PAR
151276.	35000.	0.7800	0.00	0.0	0.	11868.	8043.	1073.7	0.51375	151276.	18.223	212.7	1
	43954.	449.73	209.01	1472.1	21432.	1.00000	0.67770	1114.3	0.02819	8301.	0.05592	293.8	16.404
151163.	35954.	0.7793	0.86	6.4	112.	11328.	7696.	937.6	0.53820	151163.	18.436	202.9	1
	44815.	447.38	209.87	1478.5	21545.	1.00000	0.67941	1114.3	0.02919	8199.	0.05813	295.5	16.003
150925.	37534.	0.7800	1.93	14.4	238.	10444.	7138.	702.6	0.57855	150925.	18.624	188.4	1
	46395.	447.38	211.80	1492.8	21783.	1.00000	0.68345	820.1	0.03106	8104.	0.06267	298.9	15.369
150637.	39000.	0.7800	2.52	18.8	288.	9621.	6615.	462.2	0.61943	150637.	18.633	175.6	1
	47861.	447.38	214.31	1511.6	22071.	1.00000	0.68755	582.4	0.03324	8084.	0.06763	302.9	14.771

SEGMENT 4 CRUISE

WEIGHT	ALTITUDE	MACH NO.	DELTA T	DELTA D	DELTA F	THRUST	FUEL FLOW	EX POW	CLIFT	LIFT	L/D	Q	PCODE
	ENERGY	VELOCITY	TIME	DIST	FUEL	T/TMAX	SFC	DH/DT*	CDRAG	DRAG	SP RANGE	NOX	ENG PAR
150637.	39000.	0.7800	0.00	0.0	0.	8084.	5410.	462.2	0.61943	150637.	18.633	175.6	1
	47861.	447.38	214.31	1511.6	22071.	0.84026	0.66921	0.0	0.03324	8084.	0.08270	302.9	12.406
150400.	39000.	0.7800	2.62	19.6	237.	8071.	5401.	466.8	0.61846	150400.	18.634	175.6	1
	47861.	447.38	216.94	1531.2	22308.	0.83893	0.66920	0.0	0.03319	8071.	0.08283	305.8	12.394
148800.	39000.	0.7800	17.87	133.2	1600.	7986.	5344.	497.7	0.61188	148800.	18.631	175.6	1
	47861.	447.38	234.81	1664.4	23908.	0.83010	0.66915	0.0	0.03284	7986.	0.08371	325.6	12.309
147200.	39000.	0.7800	18.06	134.6	1600.	7904.	5289.	528.5	0.60530	147200.	18.624	175.6	1
	47861.	447.38	252.86	1799.1	25508.	0.82152	0.66911	0.0	0.03250	7904.	0.08459	345.2	12.228
145600.	39000.	0.7800	18.24	136.0	1600.	7825.	5235.	559.0	0.59872	145600.	18.608	175.6	1
	47861.	447.38	271.11	1935.1	27108.	0.81327	0.66906	0.0	0.03218	7825.	0.08546	364.7	12.149
144000.	39000.	0.7800	18.43	137.4	1600.	7750.	5185.	588.7	0.59214	144000.	18.581	175.6	1
	47861.	447.38	289.53	2072.5	28708.	0.80551	0.66902	0.0	0.03187	7750.	0.08629	384.1	12.075
142400.	39000.	0.7800	18.60	138.7	1600.	7677.	5136.	618.6	0.58556	142400.	18.550	175.6	1
	47861.	447.38	308.14	2211.2	30308.	0.79790	0.66897	0.0	0.03157	7677.	0.08712	403.4	12.002
140800.	39000.	0.7800	18.78	140.0	1600.	7605.	5087.	648.8	0.57898	140800.	18.514	175.6	1
	47861.	447.38	326.92	2351.3	31908.	0.79044	0.66893	0.0	0.03127	7605.	0.08794	422.5	11.931
139200.	39000.	0.7800	18.96	141.4	1600.	7535.	5040.	679.1	0.57240	139200.	18.475	175.6	1
	47861.	447.38	345.88	2492.6	33508.	0.78312	0.66888	0.0	0.03098	7535.	0.08877	441.5	11.861

137600.	39000.	0.7800	19.14	142.7	1600.	7466.	4993.	709.7	0.56582	137600.	18.431	175.6	1
	47861.	447.38	365.02	2635.3	35108.	0.77595	0.66884	0.0	0.03070	7466.	0.08960	460.5	11.793
136000.	39000.	0.7800	19.31	144.0	1600.	7398.	4948.	740.6	0.55924	136000.	18.383	175.6	1
	47861.	447.38	384.33	2779.3	36708.	0.76893	0.66880	0.0	0.03042	7398.	0.09042	479.3	11.726
135762.	39000.	0.7800	2.89	21.6	238.	7388.	4941.	745.2	0.55826	135762.	18.376	175.6	1
	47861.	447.38	387.22	2800.9	36946.	0.76790	0.66879	0.0	0.03038	7388.	0.09054	482.1	11.716

SEGMENT 5 DESCENT

WEIGHT	ALTITUDE ENERGY	MACH NO. VELOCITY	DELTA T TIME	DELTA D DIST	DELTA F FUEL	THRUST T/TMAX	FUEL FLOW SFC	EX POW DH/DT*	CLIFT CDRAG	LIFT DRAG	L/D SP RANGE	Q NOX	PCODE ENG PAR
135762.	39000.	0.7800	0.00	0.0	0.	-427.	619.	-2608.1	0.55826	135762.	18.376	175.6	0
	47861.	447.38	387.22	2800.9	36946.	-0.04441	0.00000	0.0	0.03038	7388.	0.72280	482.1	2.182
135760.	39000.	0.7587	0.19	1.4	2.	-398.	613.	-2476.9	0.59008	135760.	18.770	166.2	0
	47383.	435.15	387.41	2802.3	36948.	-0.04176	0.00000	0.0	0.03144	7233.	0.71018	482.1	1.969
135755.	38334.	0.7296	0.54	3.8	6.	-374.	618.	-2348.1	0.61801	135755.	18.991	158.6	0
	46087.	418.48	387.95	2806.1	36954.	-0.03825	0.00000	-1239.1	0.03254	7148.	0.67666	482.1	1.740
135749.	37357.	0.7144	0.56	3.9	6.	-377.	629.	-2287.6	0.61504	135749.	19.103	159.4	0
	44791.	409.78	388.51	2810.0	36960.	-0.03682	0.00000	-1747.3	0.03220	7106.	0.65175	482.1	1.670
135743.	36365.	0.6997	0.57	3.9	6.	-379.	638.	-2229.2	0.61145	135743.	19.209	160.3	0
	43495.	401.32	389.08	2813.8	36966.	-0.03538	0.00000	-1729.2	0.03183	7066.	0.62901	482.1	1.600
135736.	35310.	0.6852	0.59	3.9	6.	-387.	652.	-2182.0	0.60629	135736.	19.317	161.7	0
	42199.	394.49	389.67	2817.7	36972.	-0.03444	0.00000	-1796.1	0.03139	7027.	0.60544	482.1	1.546
135730.	34281.	0.6687	0.60	3.9	7.	-380.	672.	-2127.7	0.60627	135730.	19.409	161.7	0
	40903.	386.78	390.27	2821.6	36979.	-0.03217	0.00000	-1711.6	0.03124	6993.	0.57600	482.1	1.575
135723.	33222.	0.6535	0.62	3.9	7.	-373.	694.	-2078.8	0.60405	135723.	19.491	162.3	0
	39608.	379.78	390.89	2825.6	36986.	-0.02993	0.00000	-1717.4	0.03099	6963.	0.54718	482.1	1.665
135715.	32176.	0.6376	0.63	4.0	7.	-352.	715.	-2024.8	0.60430	135715.	19.564	162.2	0
	38312.	372.29	391.52	2829.5	36993.	-0.02689	0.00000	-1657.0	0.03089	6937.	0.52080	482.1	1.746
135707.	31106.	0.6228	0.65	4.0	8.	-333.	735.	-1975.5	0.60286	135707.	19.631	162.6	0
	37016.	365.37	392.17	2833.5	37001.	-0.02420	0.00000	-1651.2	0.03071	6913.	0.49741	482.2	1.839
135699.	30029.	0.6084	0.66	4.0	8.	-316.	753.	-1928.6	0.60159	135699.	19.691	162.9	0
	35720.	358.54	392.83	2837.5	37009.	-0.02194	0.00000	-1622.4	0.03055	6891.	0.47586	482.2	1.932
135691.	28950.	0.5939	0.68	4.0	9.	-301.	776.	-1883.2	0.60114	135691.	19.739	163.0	0
	34424.	351.65	393.51	2841.5	37018.	-0.01988	0.00000	-1587.3	0.03045	6874.	0.45324	482.2	2.064
135681.	27859.	0.5800	0.70	4.0	9.	-277.	799.	-1837.7	0.60029	135681.	19.779	163.2	0
	33128.	345.00	394.21	2845.6	37027.	-0.01740	0.00000	-1566.0	0.03035	6860.	0.43168	482.2	2.204
135672.	26764.	0.5662	0.71	4.1	10.	-249.	824.	-1792.0	0.60001	135672.	19.815	163.3	0
	31832.	338.35	394.92	2849.6	37037.	-0.01489	0.00000	-1533.1	0.03028	6847.	0.41052	482.2	2.343
135662.	25666.	0.5524	0.73	4.1	10.	-216.	851.	-1745.9	0.60045	135662.	19.846	163.2	0
	30536.	331.67	395.65	2853.7	37047.	-0.01236	0.00000	-1498.5	0.03026	6836.	0.38982	482.3	2.480
135651.	24561.	0.5390	0.75	4.1	11.	-203.	874.	-1705.9	0.60099	135651.	19.874	163.0	0
	29240.	325.11	396.40	2857.8	37058.	-0.01110	0.00000	-1471.8	0.03024	6825.	0.37209	482.3	2.630
135639.	23440.	0.5265	0.77	4.1	11.	-200.	897.	-1670.8	0.60020	135639.	19.902	163.2	0
	27944.	318.99	397.17	2861.9	37069.	-0.01038	0.00000	-1461.2	0.03016	6815.	0.35566	482.3	2.796
135628.	22315.	0.5140	0.78	4.1	12.	-191.	921.	-1634.7	0.60001	135628.	19.926	163.3	0
	26649.	312.87	397.96	2866.1	37081.	-0.00942	0.00000	-1434.5	0.03011	6807.	0.33969	482.3	2.963
135615.	21184.	0.5018	0.80	4.1	12.	-176.	946.	-1598.0	0.60000	135615.	19.948	163.2	0
	25353.	306.85	398.76	2870.2	37093.	-0.00828	0.00000	-1410.1	0.03008	6799.	0.32426	482.4	3.132
135602.	20047.	0.4900	0.82	4.2	13.	-157.	976.	-1561.8	0.60000	135602.	19.963	163.2	0
	24057.	300.95	399.58	2874.3	37106.	-0.00705	0.00000	-1386.6	0.03006	6793.	0.30836	482.4	3.307
135588.	18903.	0.4784	0.84	4.2	14.	-130.	1011.	-1525.1	0.60000	135588.	19.978	163.2	0
	22761.	295.19	400.42	2878.5	37120.	-0.00570	0.00000	-1362.3	0.03003	6787.	0.29191	482.5	3.435
135573.	17753.	0.4672	0.86	4.2	15.	-103.	1047.	-1489.1	0.60000	135573.	19.991	163.2	0
	21465.	289.56	401.28	2882.7	37135.	-0.00439	0.00000	-1337.5	0.03001	6782.	0.27649	482.5	3.568
135558.	16597.	0.4562	0.88	4.2	16.	-76.	1084.	-1454.1	0.60000	135558.	20.005	163.2	0
	20169.	284.05	402.16	2886.9	37151.	-0.00314	0.00000	-1312.8	0.02999	6776.	0.26208	482.6	3.706
135541.	15435.	0.4456	0.90	4.2	17.	-47.	1122.	-1419.5	0.60000	135541.	20.018	163.2	0
	18873.	278.67	403.06	2891.1	37167.	-0.00187	0.00000	-1288.1	0.02997	6771.	0.24826	482.6	3.852
135523.	14268.	0.4352	0.92	4.2	18.	-14.	1171.	-1385.1	0.60000	135523.	20.031	163.1	0
	17577.	273.41	403.98	2895.4	37185.	-0.00055	0.00000	-1263.2	0.02995	6766.	0.23354	482.7	4.009
135504.	13095.	0.4251	0.95	4.3	19.	26.	1223.	-1350.1	0.60000	135504.	20.044	163.1	0
	16281.	268.27	404.93	2899.7	37204.	0.00099	0.00000	-1237.5	0.02993	6760.	0.21930	482.8	4.167
135484.	11918.	0.4153	0.97	4.3	20.	75.	1276.	-1314.3	0.60000	135484.	20.057	163.1	0
	14985.	263.24	405.90	2904.0	37224.	0.00274	16.91116	-1210.7	0.02992	6755.	0.20627	482.9	4.326

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135463.   10735.   0.4058     1.00      4.3      22.     133.    1329.  -1277.9  0.60000  135463.   20.070    163.1      0
          13690.   258.33   406.90   2908.3   37246.  0.00466 10.02060  -1182.7  0.02990    6750.  0.19432    483.0    4.484

135392.    7357.   0.3801     2.99      12.5      70.     276.    1499.  -1182.9  0.60000  135392.   20.118    163.0      0
          10015.   245.02   409.89   2920.8   37316.  0.00885  5.43932  -1131.0  0.02982    6730.  0.16346    483.3    4.893

135307.    3978.   0.3566     3.20      12.7      85.     440.    1689.  -1092.1  0.60000  135307.   20.162    162.9      0
           6375.   232.67   413.09   2933.5   37401.  0.01298  3.84134  -1055.8  0.02976    6711.  0.13776    483.7    5.297

135167.       0.   0.3000     4.59      16.5     140.     874.    1980.   -927.9  0.73223  135167.   18.998    133.3      0
           1743.   198.44   417.68   2950.0   37541.  0.02286  2.26642   -867.5  0.03854    7115.  0.10020    484.5    5.551
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Appendix D: Overall Performance Characteristic Maps; pressure ratio, efficiency vs. flow and RPM. (with baseline aerodynamic blockages)

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Flow Rate, Corr., lbm/sec, Pressure Ratio, Efficiency, Rotor 1 Incidence, Temp. Ratio
ZONE T=" 110% of Design Corrected Speed = 4137 RPM", I = 17.0
206.3230      2.2794      0.8126      2.5142      1.3279
203.8517      2.3806      0.8341      2.9529      1.3385
202.2476      2.4331      0.8434      3.2376      1.3443
201.0352      2.4669      0.8485      3.4529      1.3483
198.2180      2.5330      0.8567      3.9532      1.3564
195.2791      2.5876      0.8613      4.4756      1.3638
192.3645      2.6299      0.8629      4.9942      1.3703
189.4935      2.6638      0.8626      5.5058      1.3760
186.6652      2.6912      0.8611      6.0106      1.3812
183.8792      2.7134      0.8586      6.5087      1.3860
181.1348      2.7315      0.8554      7.0004      1.3904
178.4314      2.7462      0.8518      7.4857      1.3944
175.7682      2.7581      0.8477      7.9649      1.3983
173.0626      2.7674      0.8431      8.4529      1.4020
170.2964      2.7741      0.8380      8.9531      1.4056
167.1750      2.7796      0.8319      9.5192      1.4095
164.6798      2.7825      0.8268      9.9730      1.4125
ZONE T=" 105% of Design Corrected Speed = 3949.3 RPM", I = 14.0
199.2340      2.0035      0.7782      2.4621      1.2833
196.2604      2.1310      0.8172      2.9953      1.2964
193.3312      2.2235      0.8397      3.5215      1.3066
190.4457      2.2930      0.8528      4.0409      1.3150
188.1599      2.3383      0.8596      4.4532      1.3208
185.3932      2.3829      0.8642      4.9534      1.3271
182.6354      2.4198      0.8665      5.4534      1.3328
179.8873      2.4504      0.8669      5.9529      1.3380
174.0149      2.4999      0.8635      7.0256      1.3479
168.8593      2.5293      0.8572      7.9735      1.3556
163.5658      2.5485      0.8481      8.9533      1.3628
158.2028      2.5605      0.8375      9.9531      1.3694
152.7519      2.5667      0.8258     10.9770      1.3758
147.4851      2.5682      0.8138     11.9740      1.3816
ZONE T=" 100% of Design Corrected Speed = 3761.1 RPM", I = 20.0
190.2553      1.8420      0.7636      2.7031      1.2507
188.5460      1.9109      0.7916      3.0144      1.2577
185.7319      1.9995      0.8216      3.5283      1.2675
184.7755      2.0253      0.8293      3.7034      1.2704
182.9599      2.0686      0.8408      4.0364      1.2756
180.2291      2.1238      0.8533      4.5386      1.2825
177.5392      2.1686      0.8612      5.0352      1.2886
174.8894      2.2059      0.8660      5.5263      1.2940
172.2791      2.2371      0.8686      6.0120      1.2990
169.7079      2.2633      0.8695      6.4923      1.3035
167.1750      2.2853      0.8691      6.9673      1.3077
164.5934      2.3037      0.8673      7.4534      1.3117
161.9505      2.3192      0.8645      7.9532      1.3156
159.0018      2.3336      0.8604      8.5135      1.3196
156.6287      2.3430      0.8566      8.9664      1.3228
151.2282      2.3589      0.8465     10.0040      1.3296
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146.0140      2.3680      0.8352     11.0152      1.3357
140.9795      2.3722      0.8234     12.0004      1.3413
136.1186      2.3728      0.8114     12.9602      1.3465
133.4166      2.3719      0.8046     13.4974      1.3492
ZONE T=" 95% of Design Corrected Speed = 3572.9 RPM", I = 17.0
181.0216      1.7094      0.7505      2.9530      1.2214
179.3280      1.7675      0.7798      3.2685      1.2275
178.3378      1.7961      0.7924      3.4534      1.2307
175.6672      1.8635      0.8190      3.9536      1.2386
173.0107      1.9184      0.8372      4.4535      1.2453
170.3689      1.9648      0.8501      4.9531      1.2514
167.7381      2.0045      0.8591      5.4531      1.2568
164.6798      2.0437      0.8660      6.0376      1.2626
159.8008      2.0923      0.8702      6.9773      1.2709
154.7835      2.1290      0.8688      7.9532      1.2785
149.6973      2.1560      0.8632      8.9529      1.2855
144.5575      2.1749      0.8547      9.9739      1.2920
139.5732      2.1869      0.8445     10.9747      1.2978
134.7507      2.1938      0.8333     11.9530      1.3032
129.4638      2.1971      0.8199     13.0371      1.3088
125.0000      2.1971      0.8079     13.9618      1.3134
120.0866      2.1944      0.7943     14.9898      1.3182
ZONE T=" 90% of Design Corrected Speed = 3384.6 RPM", I = 16.0
171.4177      1.6064      0.7440      3.2406      1.1957
170.3092      1.6381      0.7634      3.4530      1.1991
167.7087      1.6988      0.7951      3.9535      1.2064
164.6798      1.7572      0.8209      4.5402      1.2137
162.2220      1.7986      0.8367      5.0193      1.2191
157.4157      1.8653      0.8569      5.9641      1.2284
151.9881      1.9221      0.8676      7.0442      1.2375
147.4741      1.9579      0.8697      7.9534      1.2443
142.3999      1.9881      0.8670      8.9875      1.2512
137.4901      2.0092      0.8606     10.0004      1.2574
132.7495      2.0234      0.8517     10.9901      1.2629
128.1724      2.0324      0.8414     11.9567      1.2680
123.1343      2.0380      0.8286     13.0332      1.2733
118.8768      2.0399      0.8169     13.9533      1.2776
114.2156      2.0394      0.8034     14.9715      1.2822
109.7261      2.0366      0.7899     15.9629      1.2864
ZONE T=" 85% of Design Corrected Speed = 3197.3 RPM", I = 17.0
162.1044      1.5115      0.7336      3.4535      1.1714
159.5892      1.5634      0.7688      3.9533      1.1778
156.6287      1.6157      0.7990      4.5460      1.1846
154.2909      1.6521      0.8174      5.0175      1.1894
151.9881      1.6845      0.8320      5.4850      1.1938
149.6973      1.7136      0.8436      5.9530      1.1980
144.5575      1.7687      0.8605      7.0142      1.2064
140.0713      1.8063      0.8673      7.9532      1.2130
135.3568      1.8370      0.8683      8.9530      1.2194
130.7028      1.8597      0.8646      9.9532      1.2252
126.1111      1.8761      0.8577     10.9531      1.2305
121.2965      1.8880      0.8476     12.0155      1.2358
117.0996      1.8946      0.8372     12.9533      1.2402
112.5109      1.8986      0.8244     13.9913      1.2448
108.0884      1.8997      0.8111     15.0041      1.2491
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103.8398      1.8987      0.7977     15.9884      1.2530
99.7208      1.8958      0.7841     16.9533      1.2567
ZONE T=" 80% of Design Corrected Speed = 3009.1 RPM", I = 19.0
153.5195      1.4133      0.7086      3.4810      1.1472
151.2282      1.4527      0.7418      3.9538      1.1524
148.8259      1.4898      0.7693      4.4533      1.1574
146.0140      1.5299      0.7961      5.0429      1.1629
143.8347      1.5585      0.8132      5.5035      1.1668
141.6879      1.5845      0.8273      5.9606      1.1705
136.8026      1.6357      0.8501      7.0126      1.1783
132.0858      1.6754      0.8622      8.0445      1.1850
127.9930      1.7029      0.8665      8.9529      1.1903
123.1343      1.7283      0.8656     10.0471      1.1962
118.8887      1.7448      0.8608     11.0174      1.2010
114.7895      1.7566      0.8534     11.9669      1.2054
110.2775      1.7656      0.8428     13.0264      1.2101
106.3821      1.7704      0.8320     13.9532      1.2139
102.2312      1.7731      0.8194     14.9531      1.2178
97.7779       1.7735      0.8047     16.0399      1.2219
93.9346       1.7721      0.7913     16.9895      1.2253
89.7911       1.7686      0.7762     18.0251      1.2288
88.0087       1.7665      0.7695     18.4744      1.2303
ZONE T=" 70% of Design Corrected Speed = 2632.6 RPM", I = 20.0
136.1186      1.2669      0.6602      3.4667      1.1063
133.9698      1.2921      0.6919      3.9529      1.1102
131.4253      1.3211      0.7258      4.5345      1.1145
129.4638      1.3427      0.7491      4.9872      1.1177
127.4614      1.3639      0.7704      5.4532      1.1208
125.0000      1.3885      0.7930      6.0315      1.1244
121.1299      1.4237      0.8213      6.9532      1.1298
117.0002      1.4564      0.8425      7.9535      1.1351
112.9435      1.4834      0.8554      8.9532      1.1400
108.6316      1.5069      0.8618     10.0345      1.1448
104.8861      1.5232      0.8623     10.9895      1.1487
101.1634      1.5360      0.8589     11.9532      1.1525
97.2890       1.5460      0.8520     12.9716      1.1562
93.4649       1.5531      0.8425     13.9922      1.1597
89.7911       1.5576      0.8314     14.9870      1.1630
86.2617       1.5601      0.8192     15.9559      1.1660
82.4566       1.5608      0.8048     17.0148      1.1692
78.8194       1.5599      0.7899     18.0407      1.1721
75.3427       1.5575      0.7747     19.0337      1.1749
72.0193       1.5536      0.7591     19.9940      1.1774
ZONE T=" 60% of Design Corrected Speed = 2257. RPM", I = 22.0
117.7028      1.1757      0.6291      3.5438      1.0755
115.9461      1.1902      0.6569      3.9922      1.0779
114.1585      1.2048      0.6834      4.4529      1.0803
111.9483      1.2226      0.7137      5.0288      1.0831
110.2775      1.2358      0.7347      5.4688      1.0852
108.4552      1.2497      0.7556      5.9532      1.0874
104.7498      1.2766      0.7917      6.9532      1.0916
101.1179      1.3006      0.8189      7.9529      1.0956
97.2890       1.3228      0.8393      9.0280      1.0995
93.9346       1.3396      0.8507      9.9879      1.1028
90.6187       1.3536      0.8567     10.9534      1.1059
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87.1308       1.3658       0.8579      11.9868       1.1090
83.7060       1.3754       0.8548      13.0194       1.1120
80.4157       1.3824       0.8483      14.0280       1.1147
77.2548       1.3873       0.8395      15.0123       1.1172
74.2182       1.3906       0.8290      15.9719       1.1196
70.9444       1.3926       0.8157      17.0217       1.1221
67.8150       1.3931       0.8016      18.0398       1.1244
64.8237       1.3924       0.7867      19.0262       1.1266
61.9643       1.3906       0.7714      19.9809       1.1286
58.9348       1.3874       0.7536      21.0048       1.1306
57.4761       1.3852       0.7444      21.5023       1.1316
ZONE T=" 50% of Design Corrected Speed = 1880.5 RPM", I = 24.0
99.2594       1.1100       0.5986       3.4637       1.0508
97.6119       1.1195       0.6276       3.9534       1.0524
95.8370       1.1298       0.6572       4.4873       1.0542
94.3052       1.1386       0.6813       4.9535       1.0557
92.5326       1.1488       0.7073       5.4992       1.0574
91.0741       1.1570       0.7272       5.9534       1.0587
89.3421       1.1666       0.7490       6.4986       1.0603
87.9141       1.1743       0.7654       6.9531       1.0616
84.5493       1.1914       0.7983       8.0419       1.0645
81.6341       1.2051       0.8204       9.0055       1.0670
78.8194       1.2169       0.8362       9.9539       1.0692
75.7213       1.2284       0.8475      11.0185       1.0717
73.0520       1.2368       0.8525      11.9530       1.0737
70.2367       1.2443       0.8535      12.9562       1.0758
67.4759       1.2503       0.8506      13.9573       1.0778
64.7751       1.2549       0.8444      14.9533       1.0797
61.9643       1.2584       0.8351      16.0072       1.0816
59.4811       1.2605       0.8246      16.9529       1.0832
56.8929       1.2617       0.8119      17.9529       1.0849
54.1208       1.2620       0.7962      19.0400       1.0867
51.7336       1.2614       0.7813      19.9894       1.0881
49.2043       1.2598       0.7637      21.0082       1.0896
46.7987       1.2572       0.7451      21.9893       1.0910
45.1851       1.2548       0.7314      22.6539       1.0920
ZONE T=" 40% of Design Corrected Speed = 1504. RPM", I = 25.0
80.0137       1.0661       0.5805       3.4576       1.0319
78.4253       1.0725       0.6130       4.0348       1.0331
77.2548       1.0772       0.6359       4.4657       1.0339
75.7213       1.0835       0.6644       5.0372       1.0350
74.5911       1.0880       0.6842       5.4636       1.0358
73.1105       1.0940       0.7088       6.0289       1.0368
72.0121       1.0984       0.7258       6.4532       1.0376
70.5897       1.1040       0.7463       7.0089       1.0385
68.1558       1.1132       0.7772       7.9764       1.0402
65.7516       1.1218       0.8024       8.9529       1.0417
63.2192       1.1301       0.8230      10.0038       1.0434
60.9785       1.1367       0.8362      10.9531       1.0447
58.6402       1.1428       0.8452      11.9632       1.0462
56.3352       1.1481       0.8493      12.9783       1.0476
54.1208       1.1523       0.8493      13.9717       1.0488
51.9714       1.1556       0.8457      14.9530       1.0501
49.7001       1.1584       0.8386      16.0081       1.0513
47.5078       1.1603       0.8288      17.0439       1.0526
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45.6130       1.1614       0.8183       17.9529       1.0536
43.4090       1.1620       0.8038       19.0260       1.0547
41.4943       1.1620       0.7894       19.9719       1.0557
39.4656       1.1614       0.7723       20.9874       1.0567
37.5361       1.1601       0.7540       21.9660       1.0577
35.5225       1.1580       0.7323       23.0000       1.0587
33.6169       1.1550       0.7085       23.9903       1.0595
```

Appendix E: Fan-Core and LPC Performance along Engine Operating Line

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Flow Rate (corrected, lbm/sec), Pressure Ratio, Efficiency, Rotor 1 Incidence
(degrees), Temperature Ratio

ZONE T="Vehicle Mach No. = .78,  Altitude 35K ft, Thrust 100%", I=1.0
203.6437      2.4061      0.8368      3.0010      1.3415
ZONE T="Vehicle Mach No. = .78,  Altitude 35K ft, Thrust 75.6%", I=1.0
179.2984      2.3173      0.8664      5.4177      1.3140
ZONE T="Vehicle Mach No. = .78,  Altitude 35K ft, Thrust 72.9%", I=1.0
176.0543      2.3024      0.8678      5.7753      1.3108
ZONE T="Vehicle Mach No. = .78,  Altitude 35K ft, Thrust 69.9%", I=1.0
172.8357      2.2860      0.8688      6.1325      1.3074
ZONE T="Vehicle Mach No. = .78,  Altitude 39K ft, Thrust 100%", I=1.0
203.7504      2.4040      0.8363      2.9818      1.3413
ZONE T="Vehicle Mach No. = .78,  Altitude 39K ft, Thrust 84%", I=1.0
188.1720      2.3524      0.8599      4.4621      1.3226
ZONE T="Vehicle Mach No. = .78,  Altitude 39K ft, Thrust 79.8%", I=1.0
183.8159      2.3356      0.8636      4.9209      1.3182
ZONE T="Vehicle Mach No. = .78,  Altitude 39K ft, Thrust 76.8%", I=1.0
180.6934      2.3221      0.8656      5.2552      1.3151
ZONE T="Vehicle Mach No. = .78,  Altitude 39K ft, Thrust 10%", I=1.0
79.2363      1.5569      0.7933     17.8248      1.1703
ZONE T="Vehicle Mach No. = .73,  Altitude 38K ft, Thrust 10%", I=1.0
77.8263      1.5335      0.7949     17.8275      1.1638
ZONE T="Vehicle Mach No. = .71,  Altitude 37K ft, Thrust 10%", I=1.0
77.3570      1.5253      0.7956     17.8175      1.1615
ZONE T="Vehicle Mach No. = .67,  Altitude 34K ft, Thrust 10%", I=1.0
75.9212      1.4999      0.7980     17.7720      1.1542
ZONE T="Vehicle Mach No. = .61,  Altitude 30K ft, Thrust 10%", I=1.0
73.9994      1.4614      0.8034     17.5884      1.1428
ZONE T="Vehicle Mach No. = .55,  Altitude 25K ft, Thrust 10%", I=1.0
72.1560      1.4237      0.8094     17.3431      1.1315
ZONE T="Vehicle Mach No. = .49,  Altitude 20K ft, Thrust 10%", I=1.0
70.0257      1.3849      0.8153     17.0975      1.1199
ZONE T="Vehicle Mach No. = .45,  Altitude 15K ft, Thrust 10%", I=1.0
66.8582      1.3505      0.8157     17.2314      1.1102
ZONE T="Vehicle Mach No. = .41,  Altitude 10K ft, Thrust 10%", I=1.0
63.5491      1.3112      0.8186     17.2075      1.0986
ZONE T="Vehicle Mach No. = .20,  Altitude 0K ft, Thrust 100%", I=1.0
178.3165      2.2709      0.8662      5.3730      1.3059
```

Appendix F: Ice Particle Temperature and Static Air Temperature from Inlet through LPC

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TITLE = "Temperature vs Particle Distance Traveled"
VARIABLES = "x", "Particle Temperature"
ZONE T=" Ice Particle Temperature", I = 2925.0
    0.07984       416.6630
    0.15968       416.4184
    0.23952       416.2143
    0.31936       416.0493
    0.39920       415.9172
    0.47904       415.8141
    0.55888       415.7361
    0.63872       415.6801
    0.71856       415.6431
    0.79840       415.6228
    0.87824       415.6169
    0.95808       415.6236
    1.03792       415.6412
    1.11776       415.6684
    1.19761       415.7038
    1.27744       415.7465
    1.35729       415.7955
    1.43713       415.8499
    1.51697       415.9089
    1.59681       415.9721
    1.67665       416.0389
    1.75649       416.1088
    1.83633       416.1813
    1.91617       416.2561
    1.99601       416.3330
    2.07585       416.4116
    2.15569       416.4916
    2.23553       416.5730
    2.31537       416.6555
    2.39521       416.7389
    2.47505       416.8231
    2.55489       416.9081
    2.63473       416.9936
    2.71457       417.0796
    2.79441       417.1661
    2.87425       417.2529
    2.95409       417.3401
    3.03393       417.4275
    3.11377       417.5151
    3.19361       417.6029
    3.27345       417.6909
    3.35329       417.7789
    3.43313       417.8670
    3.51297       417.9553
    3.59281       418.0435
    3.67266       418.1318
    3.75250       418.2202
    3.83233       418.3085
    3.91218       418.3969
    3.99202       418.4852
    4.07186       418.5735
    4.15170       418.6618
    4.23154       418.7501
    4.31138       418.8384
    4.39122       418.9266
    4.47106       419.0148
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4.55090       419.1029
4.63074       419.1910
4.71058       419.2791
4.79042       419.3671
4.87026       419.4551
4.95010       419.5431
5.02994       419.6310
5.10978       419.7188
5.18962       419.8066
5.26946       419.8943
5.34930       419.9820
5.42914       420.0696
5.50898       420.1571
5.58882       420.2447
5.66866       420.3321
5.74850       420.4196
5.82834       420.5069
5.90818       420.5942
5.98802       420.6815
6.06786       420.7687
6.14771       420.8558
6.22754       420.9429
6.30738       421.0300
6.38723       421.1170
6.46707       421.2039
6.54691       421.2908
6.62675       421.3777
6.70659       421.4644
6.78643       421.5512
6.86627       421.6379
6.94611       421.7246
7.02595       421.8112
7.10579       421.8978
7.18563       421.9843
7.26547       422.0707
7.34531       422.1572
7.42515       422.2436
7.50499       422.3299
7.58483       422.4162
7.66467       422.5024
7.74451       422.5886
7.82435       422.6747
7.90419       422.7608
7.98403       422.8469
8.06387       422.9329
8.14371       423.0189
8.22355       423.1048
8.30339       423.1907
8.38323       423.2766
8.46307       423.3623
8.54291       423.4481
8.62275       423.5338
8.70259       423.6195
8.78243       423.7051
8.86228       423.7907
8.94212       423.8763
9.02195       423.9618
9.10180       424.0472
9.18164       424.1327
9.26148       424.2181
9.34132       424.3034
9.42116       424.3887
9.50100       424.4740
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 9.58084       424.5593
 9.66068       424.6444
 9.74052       424.7296
 9.82036       424.8147
 9.90020       424.8998
 9.98004       424.9849
10.05988       425.0699
10.13972       425.1548
10.21956       425.2398
10.29940       425.3247
10.37924       425.4096
10.45909       425.4944
10.53893       425.5792
10.61877       425.6639
10.69861       425.7487
10.77845       425.8334
10.85829       425.9180
10.93813       426.0027
11.01797       426.0872
11.09781       426.1718
11.17765       426.2563
11.25749       426.3408
11.33734       426.4252
11.41718       426.5096
11.49702       426.5940
11.57686       426.6784
11.65670       426.7627
11.73654       426.8470
11.81638       426.9312
11.89622       427.0154
11.97606       427.0996
12.05590       427.1838
12.13575       427.2679
12.21559       427.3520
12.29543       427.4361
12.37527       427.5201
12.45511       427.6041
12.53495       427.6881
12.61479       427.7721
12.69463       427.8560
12.77447       427.9398
12.85431       428.0237
12.93415       428.1076
13.01400       428.1913
13.09384       428.2751
13.17368       428.3589
13.25352       428.4427
13.33336       428.5263
13.41320       428.6100
13.49304       428.6937
13.57288       428.7773
13.65272       428.8609
13.73256       428.9445
13.81240       429.0280
13.89224       429.1115
13.97209       429.1950
14.05193       429.2784
14.13177       429.3619
14.21161       429.4453
14.29145       429.5287
14.37129       429.6120
14.45113       429.6954
14.53097       429.7787
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14.61081       429.8619
14.69065       429.9452
14.77049       430.0284
14.85034       430.1116
14.93018       430.1948
15.01002       430.2779
15.08986       430.3611
15.16970       430.4442
15.24954       430.5273
15.32938       430.6103
15.40922       430.6933
15.48906       430.7764
15.56890       430.8594
15.64874       430.9423
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72.44471	491.6699
72.46157	491.6699
72.47843	491.7829
72.49529	492.6719
72.51215	493.4771
72.52900	494.2052
72.54586	494.8625
72.56272	495.4550
72.57957	495.9886
72.59644	496.4685
72.61330	496.8998
72.63015	497.2871
72.64701	497.6347
72.66387	497.9467
72.68073	498.2264
72.69759	498.4773
72.71445	498.7023
72.73130	498.9043
72.74816	499.0855
72.76502	499.2484
72.78188	499.3947
72.79874	499.5264
72.81559	499.6451
72.83245	499.7521
72.84931	499.8489
72.86617	499.9366
72.88303	500.0161
72.89989	500.0884
72.91674	500.1544
72.93360	500.2147
72.93916	500.2484
72.94455	500.3764
72.94995	500.5193
72.95535	500.6556
72.96074	500.7869
72.96614	500.9130
72.97153	501.0342
72.97694	501.1508
72.98233	501.2628
72.98773	501.3705
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73.00932	501.7604
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73.02551	502.0143
73.03091	502.0923
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73.04170	502.2392
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73.05789	502.4381
73.06329	502.4992
73.06869	502.5578
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73.09028	502.7696
73.09567	502.8173

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73.18203       503.3642
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73.30077       503.7137
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73.31696       503.7416
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73.34395       503.7814
73.34934       503.7885
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73.36554       503.8082
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73.37634       503.8202
73.38173       503.8258
73.38712       503.8313
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73.75241       504.2305
73.77345       504.2619
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73.85764       504.3891
73.87868       504.4213
73.89972       504.4535
73.92077       504.4857
73.94181       504.5181
73.96285       504.5505
73.98390       504.5829
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74.02599       504.6477
74.04704       504.6801
74.06808       504.7125
74.08913       504.7449
74.11017       504.7773
74.13121       504.8098
74.15226       504.8422
74.17330       504.8746
74.19435       504.9070
74.21539       504.9393
74.23643       504.9717
74.25748       505.0040
74.27853       505.0363
74.29957       505.0686
74.32062       505.1010
74.34166       505.1332
74.36270       505.1654
74.38375       505.1977
74.40479       505.2299
74.42584       505.2621
74.44688       505.2943
74.46793       505.3265
74.48898       505.3586
74.51002       505.3907
74.53106       505.4229
74.55211       505.4550
74.57315       505.4871
74.59419       505.5192
74.61524       505.5512
74.63628       505.5833
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74.76255	505.7751
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74.80464	505.8390
74.82569	505.8708
74.84673	505.9027
74.86777	505.9345
74.88882	505.9664
74.90987	505.9982
74.93091	506.0300
74.95196	506.0618
74.97300	506.0936
74.99404	506.1253
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75.03613	506.1888
75.05718	506.2205
75.07822	506.2521
75.09927	506.2838
75.12032	506.3155
75.14136	506.3471
75.16240	506.3788
75.18345	506.4103
75.20449	506.4419
75.22553	506.4735
75.24658	506.5051
75.26762	506.5366
75.28867	506.5682
75.30972	506.5997
75.33076	506.6312
75.35181	506.6628
75.37285	506.6942
75.39389	506.7257
75.41494	506.7571
75.43598	506.7885
75.45703	506.8200
75.47807	506.8514
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75.61401	507.6783
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75.62380	507.6459
75.62870	507.6303
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75.63850	507.6003
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75.64830	507.5716
75.65320	507.5578
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75.88349       507.1209
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75.89329       507.1074
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75.93739       507.0486
75.94229       507.0422
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76.04028	506.9204
76.04518	506.9145
76.05009	506.9086
76.05499	506.9027
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76.06478	506.8909
76.06969	506.8851
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76.07948	506.8734
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76.08928	506.8618
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76.13582	506.8209
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76.15692	506.8094
76.16220	506.8069
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76.17802	506.8008
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76.19913	506.7948
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76.20967	506.7926
76.21495	506.7917
76.22022	506.7910
76.22550	506.7903
76.23077	506.7898
76.23605	506.7893
76.24133	506.7890
76.24660	506.7888
76.25188	506.7887
76.25715	506.7887
76.26243	506.7887
76.26770	506.7889
76.27298	506.7891
76.27825	506.7894
76.28353	506.7898
76.28880	506.7903
76.29408	506.7909
76.29935	506.7915
76.30463	506.7921
76.30991	506.7929
76.31518	506.7937
76.32046	506.7946

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76.33101	506.7965
76.33628	506.7975
76.34155	506.7986
76.34683	506.7998
76.35210	506.8010
76.35738	506.8022
76.36266	506.8034
76.36794	506.8047
76.37321	506.8061
76.37848	506.8075
76.38376	506.8089
76.38903	506.8104
76.39431	506.8119
76.39958	506.8134
76.40486	506.8150
76.41013	506.8166
76.41541	506.8183
76.42068	506.8199
76.42596	506.8216
76.43124	506.8233
76.43651	506.8251
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76.45234	506.8305
76.45761	506.8323
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76.46816	506.8361
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76.49454	506.8459
76.49982	506.8479
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76.51564	506.8540
76.52091	506.8560
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76.54202	506.8645
76.54729	506.8667
76.55257	506.8688
76.55784	506.8709
76.56312	506.8731
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76.57367	506.8775
76.57894	506.8797
76.58422	506.8819
76.58949	506.8842
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76.60004	506.8887
76.60532	506.8909
76.61060	506.8932
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76.67924	506.9160
76.69508	506.9217

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76.85333       507.0024
76.86916       507.0119
76.88498       507.0216
76.90081       507.0313
76.91663       507.0412
76.93246       507.0512
76.94829       507.0613
76.96411       507.0714
76.97993       507.0815
76.99576       507.0918
77.01159       507.1021
77.02741       507.1124
77.04324       507.1227
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77.13819       507.1851
77.15402       507.1955
77.16985       507.2060
77.18567       507.2164
77.20149       507.2268
77.21732       507.2373
77.23315       507.2477
77.24897       507.2581
77.26480       507.2686
77.28062       507.2789
77.29645       507.2893
77.31228       507.2997
77.32810       507.3101
77.34393       507.3205
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77.37558       507.3412
77.39140       507.3515
77.40723       507.3618
77.42306       507.3721
77.43888       507.3825
77.45470       507.3928
77.47054       507.4031
77.48636       507.4133
77.50218       507.4236
77.51801       507.4339
77.53384       507.4442
77.54966       507.4544
77.56549       507.4646
77.58131       507.4748
77.59714       507.4850
77.61297       507.4952
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77.64462       507.5156
77.66045       507.5257
77.67627       507.5359
77.69209       507.5460
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   77.78705       507.6065
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   77.81870       507.6266
   77.83453       507.6366
   77.85035       507.6466
   77.86618       507.6566
   77.88200       507.6666
   77.89783       507.6766
   77.91365       507.6865
   77.92948       507.6965
   77.94530       507.7064
   77.96113       507.7163
   77.97696       507.7262
   77.99278       507.7361
   78.00861       507.7460
   78.02444       507.7559
   78.04026       507.7657
   78.05608       507.7756
   78.07191       507.7854
   78.08774       507.7952
   78.10356       507.8051
   78.11939       507.8148
   78.13522       507.8246
   78.15104       507.8344
   78.16686       507.8442
   78.18269       507.8539
   78.19852       507.8637
   78.21434       507.8734
   78.23017       507.8831
VARIABLES = "x", "Air Static Temperature"
ZONE T=" Static Air Temperature", I = 26.0
    0.00000    416.9700
   40.07360    458.9067
   47.45212    467.8723
   49.25944    462.0252
   50.66056    473.7310
   54.75445    475.5438
   56.07415    476.0240
   58.45746    485.5237
   59.02501    485.0961
   59.64998    489.7584
   61.47612    490.6278
   62.08459    491.3479
   64.41123    500.0971
   64.96181    500.1538
   65.56672    503.5971
   67.33422    504.7017
   67.92163    505.4839
   70.14417    513.0594
   70.66892    513.6744
   71.24777    515.8846
   72.93916    516.7426
   73.49987    515.5519
   75.60910    521.0090
   76.10417    517.9590
   76.64760    519.1533
   78.23017    517.4634
```

```
VARIABLES = "x", "y"
ZONE T=" Location of Fan Leading Edge", I = 2.0
   40.07360    400.0
   40.07360    465.0
```

Appendix G: NPSS cycle analysis for the altitude cruise conditions at 35000 feet

5μm, ISA +18R

```
**********************************************************************************************************************************
Date:05/10/13    Time:10:57:24    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 25/ 39/ 1/23    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 449.58    Stator 1 exit: 468.32    Stator 2 inlet: 490.14    Stator 2 exit: 497.71
            Stator 3 inlet: 526.40    Stator 3 exit: 534.65    Stator 4 inlet: 561.45    Stator 4 exit: 569.32
            Stator 5 inlet: 590.12    Stator 5 exit: 597.80            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.12
Fan Bypass Relative Humidity       0.16
LPC Inlet Relative Humidity        2.30
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.01
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          776.30    Fan/LPC Inlet Flow Velocity        481.58
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.45
Ambient Static Temperature     411.85    Fan/LPC Inlet Static Temperature   442.76
Additional Water at LPC Exit   0.0024944
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	475.41	8115.0	0.5989	4859.81	5.3095	776.30	31.972	1.684	100.000	2819.2	2646.6	1840.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	475.41	5.170	462.10	-19.92	0.0000	1275.57	3.458	411.85	3891.4	0.7800	1.40081	0.0000308	475.40	0.015	0.0000
FS1	Inlet.Fl_O	475.41	5.170	462.10	-19.92	0.0000	1275.57	3.840	424.39	4168.2	0.6657	1.40081	0.0000308	475.40	0.015	0.0000
FS12	Splitter.Fl_02	400.06	5.167	462.10	-19.92	0.0000	1073.94	3.865	425.24	3531.8	0.6575	1.40081	0.0000308	400.05	0.012	0.0000
FS2	Splitter.Fl_01	75.35	5.167	462.10	-19.92	0.0000	202.27	4.451	442.76	830.5	0.4667	1.40081	0.0000308	75.35	0.002	0.0000
FS14	Fan.Fl_O	400.06	8.747	544.48	-0.16	0.0000	688.68	7.261	516.27	2606.7	0.5226	1.39985	0.0000308	400.05	0.012	0.0000
FS23	LPC.Fl_O	75.35	12.789	626.45	19.54	0.0000	95.15	11.232	603.69	412.6	0.4349	1.39816	0.0000308	75.35	0.002	0.0000
FS24	VaporIN.Fl_O	75.54	12.789	629.44	5.95	0.0000	95.62	11.211	606.28	412.6	0.4381	1.39773	0.0025252	75.35	0.190	0.0025
FS25	Bleed2.Fl_O	75.54	12.789	629.44	5.95	0.0000	95.62	11.211	606.28	412.6	0.4381	1.39773	0.0025252	75.35	0.190	0.0025
FS3	HPC.Fl_O	71.87	165.293	1382.63	194.27	0.0000	10.43	148.980	1345.30	49.7	0.3938	1.35654	0.0025252	71.69	0.181	0.0025
FS36	Bleed3.Fl_O	55.70	165.293	1382.63	194.27	0.0000	8.09	155.819	1361.32	49.3	0.2960	1.35654	0.0025252	55.56	0.140	0.0025
FS4	Burner.Fl_O	57.05	161.486	2819.23	164.33	0.0243	12.10	152.540	2783.42	74.6	0.3006	1.28422	0.0025252	55.56	0.140	0.0316
FS45	HPT.Fl_O	76.00	37.751	1849.17	-14.27	0.0181	55.87	33.999	1802.64	265.4	0.4006	1.32053	0.0025252	74.46	0.188	0.0244
FS49	LPT.Fl_O	76.89	8.687	1325.60	-154.42	0.0179	207.93	7.493	1275.85	860.2	0.4724	1.34763	0.0025252	75.35	0.190	0.0241
FS5	TEGV.Fl_O	76.89	8.687	1325.66	-154.42	0.0179	207.94	7.493	1275.91	860.2	0.4724	1.34763	0.0025252	75.35	0.190	0.0241
FS8	Core_Nozz.Fl_O	76.89	8.687	1325.79	-154.42	0.0179	207.95	4.646	1125.68	613.4	1.0000	1.34762	0.0025252	75.35	0.190	0.0241
FS17	FanDuctLkg.Fl_O	400.06	8.747	544.48	-0.16	0.0000	688.68	7.261	516.27	2606.7	0.5226	1.39985	0.0000308	400.05	0.012	0.0000
FS171	Bleed15.Fl_O	400.06	8.747	544.48	-0.16	0.0000	688.68	7.056	512.06	2481.9	0.5625	1.39985	0.0000308	400.05	0.012	0.0000
FS172	FanDuct.Fl_O	400.06	8.747	544.48	-0.16	0.0000	688.68	7.056	512.06	2481.9	0.5625	1.39985	0.0000308	400.05	0.012	0.0000
FS173	Byp_Nozz.Fl_O	400.06	8.747	544.48	-0.16	0.0000	688.68	4.619	453.63	2006.9	1.0000	1.39985	0.0000308	400.05	0.012	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1073.94	1.693	0.9109	4121.004	1.1783	0.9173	-11181.7	38.37	23.45
LPC	202.27	2.475	0.8306	4121.004	1.3557	0.8506	-4206.4	2.96	2.22
HPC	95.62	12.924	0.8588	10318.107	2.1966	0.8979	-19637.7	26.74	25.93
HPT	12.10	4.278	0.9118	214.076	1.3463	0.8911	19637.7		
LPT	55.87	4.346	0.9156	90.456	1.3915	0.8986	15388.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1247.81	1.677	0.9128	4081.711	0.0636	0.8607	1.0235	0.9980	0.9905
LPC	165.14	2.728	0.8329	1.088	0.0000	1.2248	0.8538	0.9972	0.0003
HPC	86.96	12.363	0.8677	10043.034	13.4277	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.187	0.9118	1.287	4.1869	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.516	0.9224	1.018	3.5163	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3891.36	11470.9

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4724	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.3095	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11366.7	9073.8	19637.7
LP_Shaft	3889.8	20778.2	15388.5

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.7797	1013.96	100.11	37.751
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.8838	1013.96	100.11	8.687
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	976.16	90.69	46.340
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1207.79	149.07	107.342
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	976.16	90.69	46.340
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1382.63	194.27	165.293
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	976.16	90.69	46.340

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	629.44	5.95	12.789
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	8.6247	1382.63	194.27	161.486
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	7.5468	1382.63	194.27	90.710
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1382.63	194.27	165.293
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1382.63	194.27	165.293
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1382.63	194.27	165.293
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	544.48	-0.16	8.747
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	544.48	-0.16	8.747
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	544.48	-0.16	8.747
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	544.48	-0.16	8.747

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2819.23	0.9995	0.0230	1.34995	0.02430

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.512	0.9810	1.0000	0.9800	613.40	1.000	1589.9	4528.2
Byp_Nozz	2.529	0.9811	1.0000	0.9800	2006.86	1.000	1023.5	15057.6

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**********************************************************************************************************************************
Date:05/10/13    Time:10:57:57    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 19/ 33/ 1/17    Run by: Philip C Jorgenson      PC:    75
Temperature Stator 1 inlet: 459.18    Stator 1 exit: 475.50    Stator 2 inlet: 495.41    Stator 2 exit: 503.84
            Stator 3 inlet: 527.44    Stator 3 exit: 535.81    Stator 4 inlet: 558.04    Stator 4 exit: 565.66
            Stator 5 inlet: 583.45    Stator 5 exit: 590.65            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.59
Fan Bypass Relative Humidity       0.24
LPC Inlet Relative Humidity        1.84
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.01
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          776.30    Fan/LPC Inlet Flow Velocity        412.05
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.64
Ambient Static Temperature     411.85    Fan/LPC Inlet Static Temperature   447.94
Additional Water at LPC Exit   0.0031004

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS      OPR       EPR       PowerSet      T4      T41      T49
 0.780   35000.0    18.00    439.10     6109.6    0.5930    3623.22    5.6163    776.30   26.730     1.342       75.600      2550.2   2398.0   1660.9


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht     FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O          439.10     5.170    462.10    -19.92  0.0000   1178.15     3.458    411.85    3594.2  0.7800   1.40081   0.0000308   439.09    0.014    0.0000
FS1   Inlet.Fl_O            439.10     5.170    462.10    -19.92  0.0000   1178.15     4.119    433.00    4168.2  0.5790   1.40081   0.0000308   439.09    0.014    0.0000
FS12  Splitter.Fl_02        372.74     5.167    462.10    -19.92  0.0000   1000.58     4.110    432.79    3531.8  0.5812   1.40081   0.0000308   372.73    0.011    0.0000
FS2   Splitter.Fl_01         66.37     5.167    462.10    -19.92  0.0000    178.16     4.635    447.94     830.5  0.3970   1.40081   0.0000308    66.37    0.002    0.0000
FS14  Fan.Fl_O              372.74     8.047    530.89     -3.43  0.0000    688.70     6.680    503.37    2606.7  0.5226   1.40006   0.0000308   372.73    0.011    0.0000
FS23  LPC.Fl_O               66.37    12.409    613.63     16.45  0.0000     85.49    11.228    596.38     412.6  0.3809   1.39848   0.0000308    66.37    0.002    0.0000
FS24  VaporIN.Fl_O           66.57    12.409    617.41     -0.42  0.0000     86.02    11.208    599.78     412.6  0.3842   1.39795   0.0031313    66.37    0.208    0.0031
FS25  Bleed2.Fl_O            66.57    12.409    617.41     -0.42  0.0000     86.02    11.208    599.78     412.6  0.3842   1.39795   0.0031313    66.37    0.208    0.0031
FS3   HPC.Fl_O               63.34   138.194   1299.37    169.25  0.0000     10.66   123.862   1262.06      49.7  0.4037   1.36141   0.0031313    63.15    0.198    0.0031
FS36  Bleed3.Fl_O            49.09   138.194   1299.37    169.25  0.0000      8.26   129.894   1278.16      49.3  0.3028   1.36141   0.0031313    48.94    0.153    0.0031
FS4   Burner.Fl_O            50.10   135.011   2550.20    144.50  0.0206     12.09   127.512   2516.99      74.6  0.2992   1.29428   0.0031313    48.94    0.153    0.0278
FS45  HPT.Fl_O               66.80    31.395   1668.42    -17.41  0.0153     56.08    28.245   1625.05     265.4  0.4010   1.33048   0.0031313    65.59    0.205    0.0217
FS49  LPT.Fl_O               67.58     7.216   1189.32   -142.92  0.0152    208.42     6.220   1143.51     860.2  0.4719   1.35789   0.0031313    66.37    0.208    0.0215
FS5   TEGV.Fl_O              67.58     7.216   1189.39   -142.92  0.0152    208.42     6.220   1143.58     860.2  0.4719   1.35789   0.0031313    66.37    0.208    0.0215
FS8   Core_Nozz.Fl_O         67.58     7.216   1189.52   -142.92  0.0152    208.43     3.848   1005.77     613.4  1.0000   1.35788   0.0031313    66.37    0.208    0.0215
FS17  FanDuctLkg.Fl_O       372.74     8.047    530.89     -3.43  0.0000    688.70     6.680    503.37    2606.7  0.5226   1.40006   0.0000308   372.73    0.011    0.0000
FS171 Bleed15.Fl_O          372.74     8.047    530.89     -3.43  0.0000    688.70     6.491    499.26    2481.9  0.5625   1.40006   0.0000308   372.73    0.011    0.0000
FS172 FanDuct.Fl_O          372.74     8.047    530.89     -3.43  0.0000    688.70     6.491    499.26    2481.9  0.5625   1.40006   0.0000308   372.73    0.011    0.0000
FS173 Byp_Nozz.Fl_O         372.74     8.047    530.89     -3.43  0.0000    688.70     4.250    442.28    2006.9  1.0000   1.40006   0.0000308   372.73    0.011    0.0000

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR      eff        Nc       TR   efPoly       pwr      SMN      SMW
Fan      1000.58   1.557   0.9070  3844.865   1.1489   0.9127   -8698.1    62.23    29.30
LPC       178.16   2.401   0.8671  3844.865   1.3279   0.8823   -3415.4     3.99     3.15
HPC        86.02  11.137   0.8615 10038.885   2.1045   0.8982  -15593.4    33.66    32.34
HPT        12.09   4.300   0.9079   216.890   1.3559   0.8883   15593.4
LPT        56.08   4.351   0.9115    88.848   1.4001   0.8942   12113.5

TURBOMACHINERY MAP DATA
             WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan       1162.58   1.544   0.9089  3808.205   0.0589      0.8607    1.0235    0.9980    0.9905
LPC        143.26   2.433   0.8208     1.016   0.0000      1.2436    0.9782    1.0564    0.0003
HPC         78.24  10.659   0.8704  9771.255  12.8223      1.0995    1.0494    0.9898    0.9733
HPT          0.96   4.209   0.9079     1.303   4.2089     12.6299    0.9723    1.0000    0.0003
LPT          0.86   3.520   0.9182     0.999   3.5203     65.2590    0.7521    0.9926    0.0005
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===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3594.18	10594.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4719	860.21
FanDuct	0.0000	0.5625	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6163	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10952.8	7477.4	15593.4
LP_Shaft	3629.1	17530.8	12113.5

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.4499	964.65	84.41	31.395
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7789	964.65	84.41	7.216
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	930.43	75.93	40.081
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1140.44	128.53	90.395
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	930.43	75.93	40.081
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1299.37	169.25	138.194
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	930.43	75.93	40.081

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	617.41	-0.42	12.409
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.6013	1299.37	169.25	135.011
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.6513	1299.37	169.25	75.743
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1299.37	169.25	138.194
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1299.37	169.25	138.194
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1299.37	169.25	138.194
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	530.89	-3.43	8.047
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	530.89	-3.43	8.047
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	530.89	-3.43	8.047
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	530.89	-3.43	8.047

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2550.18	0.9995	0.0230	1.00645	0.02057

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.087	0.9813	1.0000	0.9800	613.40	1.000	1508.4	3407.2
Byp_Nozz	2.327	0.9815	1.0000	0.9800	2006.86	1.000	1010.7	13297.3

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**********************************************************************************************************************************
Date:05/10/13    Time:10:58:30    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    72
Temperature Stator 1 inlet: 460.10    Stator 1 exit: 476.18    Stator 2 inlet: 495.88    Stator 2 exit: 504.33
            Stator 3 inlet: 527.46    Stator 3 exit: 535.82    Stator 4 inlet: 557.60    Stator 4 exit: 565.18
            Stator 5 inlet: 582.66    Stator 5 exit: 589.81            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.47
Fan Bypass Relative Humidity       0.25
LPC Inlet Relative Humidity        1.80
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.01
Drop Diameter                 0.0000050    Inlet Length                        40.00
Ambient Flow Velocity           776.30    Fan/LPC Inlet Flow Velocity        403.58
Ambient Static Pressure           3.46    Fan/LPC Inlet Static Pressure        4.66
Ambient Static Temperature      411.85    Fan/LPC Inlet Static Temperature   448.52
Additional Water at LPC Exit    0.0032020
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	434.86	5882.0	0.5936	3491.78	5.6684	776.30	26.108	1.304	72.700	2520.7	2370.8	1641.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	434.86	5.170	462.10	-19.92	0.0000	1166.77	3.458	411.85	3559.4	0.7800	1.40081	0.0000308	434.85	0.013	0.0000
FS1	Inlet.Fl_O	434.86	5.170	462.10	-19.92	0.0000	1166.77	4.147	433.83	4168.2	0.5701	1.40081	0.0000308	434.85	0.013	0.0000
FS12	Splitter.Fl_02	369.65	5.167	462.10	-19.92	0.0000	992.29	4.134	433.51	3531.8	0.5735	1.40081	0.0000308	369.64	0.011	0.0000
FS2	Splitter.Fl_01	65.21	5.167	462.10	-19.92	0.0000	175.06	4.656	448.52	830.5	0.3886	1.40081	0.0000308	65.21	0.002	0.0000
FS14	Fan.Fl_O	369.65	7.968	529.26	-3.82	0.0000	688.70	6.614	501.83	2606.7	0.5226	1.40008	0.0000308	369.64	0.011	0.0000
FS23	LPC.Fl_O	65.21	12.337	612.22	16.11	0.0000	84.40	11.196	595.52	412.6	0.3750	1.39852	0.0000308	65.21	0.002	0.0000
FS24	VaporIN.Fl_O	65.42	12.337	616.12	-1.31	0.0000	84.94	11.177	599.04	412.6	0.3784	1.39796	0.0032329	65.21	0.211	0.0032
FS25	Bleed2.Fl_O	65.42	12.337	616.12	-1.31	0.0000	84.94	11.177	599.04	412.6	0.3784	1.39796	0.0032329	65.21	0.211	0.0032
FS3	HPC.Fl_O	62.25	134.976	1290.20	166.31	0.0000	10.69	120.894	1252.88	49.7	0.4049	1.36195	0.0032329	62.05	0.201	0.0032
FS36	Bleed3.Fl_O	48.24	134.976	1290.20	166.31	0.0000	8.28	126.823	1268.99	49.3	0.3036	1.36195	0.0032329	48.09	0.155	0.0032
FS4	Burner.Fl_O	49.21	131.868	2520.75	142.11	0.0202	12.09	124.542	2487.82	74.6	0.2991	1.29540	0.0032329	48.09	0.155	0.0275
FS45	HPT.Fl_O	65.63	30.645	1648.68	-17.96	0.0151	56.11	27.566	1605.67	265.4	0.4011	1.33163	0.0032329	64.45	0.208	0.0214
FS49	LPT.Fl_O	66.39	7.043	1174.70	-141.85	0.0149	208.47	6.070	1129.33	860.2	0.4719	1.35901	0.0032329	65.21	0.211	0.0212
FS5	TEGV.Fl_O	66.39	7.043	1174.77	-141.85	0.0149	208.48	6.070	1129.39	860.2	0.4719	1.35900	0.0032329	65.21	0.211	0.0212
FS8	Core_Nozz.Fl_O	66.39	7.043	1174.90	-141.85	0.0149	208.49	3.754	992.96	613.4	1.0000	1.35899	0.0032329	65.21	0.211	0.0212
FS17	FanDuctLkg.Fl_O	369.65	7.968	529.26	-3.82	0.0000	688.70	6.614	501.83	2606.7	0.5226	1.40008	0.0000308	369.64	0.011	0.0000
FS171	Bleed15.Fl_O	369.65	7.968	529.26	-3.82	0.0000	688.70	6.427	497.73	2481.9	0.5625	1.40008	0.0000308	369.64	0.011	0.0000
FS172	FanDuct.Fl_O	369.65	7.968	529.26	-3.82	0.0000	688.70	6.427	497.73	2481.9	0.5625	1.40008	0.0000308	369.64	0.011	0.0000
FS173	Byp_Nozz.Fl_O	369.65	7.968	529.26	-3.82	0.0000	688.70	4.208	440.92	2006.9	1.0000	1.40008	0.0000308	369.64	0.011	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	992.29	1.542	0.9070	3813.867	1.1453	0.9125	-8421.9	67.00	30.02
LPC	175.06	2.387	0.8688	3813.867	1.3249	0.8837	-3324.5	4.27	3.36
HPC	84.94	10.941	0.8615	10008.285	2.0941	0.8981	-15138.7	34.50	33.12
HPT	12.09	4.303	0.9073	217.262	1.3571	0.8881	15138.7		
LPT	56.11	4.351	0.9108	88.658	1.4008	0.8933	11746.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1152.95	1.530	0.9089	3777.502	0.0584	0.8607	1.0235	0.9980	0.9905
LPC	141.26	2.401	0.8202	1.007	0.0000	1.2391	0.9905	1.0592	0.0003
HPC	77.25	10.472	0.8704	9741.471	12.7535	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.212	0.9073	1.306	4.2116	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.520	0.9176	0.997	3.5203	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3559.44	10492.4

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4719	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6684	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10908.1	7289.1	15138.7
LP_Shaft	3599.9	17137.8	11746.4

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.4075	959.25	82.50	30.645
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7654	959.25	82.50	7.043
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	925.42	74.12	39.318
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1133.04	126.08	88.373
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	925.42	74.12	39.318
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1290.20	166.31	134.976
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	925.42	74.12	39.318

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	616.12	-1.31	12.337
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.4698	1290.20	166.31	131.868
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.5362	1290.20	166.31	73.968
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1290.20	166.31	134.976
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1290.20	166.31	134.976
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1290.20	166.31	134.976
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	529.26	-3.82	7.968
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	529.26	-3.82	7.968
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	529.26	-3.82	7.968
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	529.26	-3.82	7.968

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2520.72	0.9995	0.0230	0.96994	0.02017

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.037	0.9811	1.0000	0.9800	613.40	1.000	1499.3	3275.7
Byp_Nozz	2.304	0.9815	1.0000	0.9800	2006.86	1.000	1009.1	13098.8

```
**********************************************************************************************************************************
Date:05/10/13    Time:10:59:04    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 20/ 34/ 1/18    Run by: Philip C Jorgenson      PC:    69
Temperature Stator 1 inlet: 460.95    Stator 1 exit: 476.77    Stator 2 inlet: 496.25    Stator 2 exit: 504.70
            Stator 3 inlet: 527.37    Stator 3 exit: 535.69    Stator 4 inlet: 557.03    Stator 4 exit: 564.57
            Stator 5 inlet: 581.74    Stator 5 exit: 588.81            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.37
Fan Bypass Relative Humidity       0.26
LPC Inlet Relative Humidity        1.76
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.01
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          776.30    Fan/LPC Inlet Flow Velocity        395.28
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.68
Ambient Static Temperature     411.85    Fan/LPC Inlet Static Temperature   449.07
Additional Water at LPC Exit  0.0032874
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	430.80	5664.3	0.5943	3366.42	5.7242	776.30	25.501	1.267	69.900	2492.3	2344.6	1622.6

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	430.80	5.170	462.10	-19.92	0.0000	1155.86	3.458	411.85	3526.2	0.7800	1.40081	0.0000308	430.78	0.013	0.0000
FS1	Inlet.Fl_O	430.80	5.170	462.10	-19.92	0.0000	1155.86	4.172	434.60	4168.2	0.5618	1.40081	0.0000308	430.78	0.013	0.0000
FS12	Splitter.Fl_02	366.73	5.167	462.10	-19.92	0.0000	984.46	4.156	434.18	3531.8	0.5664	1.40081	0.0000308	366.72	0.011	0.0000
FS2	Splitter.Fl_01	64.07	5.167	462.10	-19.92	0.0000	171.98	4.676	449.07	830.5	0.3804	1.40081	0.0000308	64.06	0.002	0.0000
FS14	Fan.Fl_O	366.73	7.893	527.69	-4.19	0.0000	688.70	6.552	500.34	2606.7	0.5226	1.40010	0.0000308	366.72	0.011	0.0000
FS23	LPC.Fl_O	64.07	12.253	610.66	15.74	0.0000	83.37	11.151	594.47	412.6	0.3696	1.39855	0.0000308	64.06	0.002	0.0000
FS24	VaporIN.Fl_O	64.28	12.253	614.68	-2.14	0.0000	83.92	11.132	598.11	412.6	0.3730	1.39799	0.0033183	64.06	0.213	0.0033
FS25	Bleed2.Fl_O	64.28	12.253	614.68	-2.14	0.0000	83.92	11.132	598.11	412.6	0.3730	1.39799	0.0033183	64.06	0.213	0.0033
FS3	HPC.Fl_O	61.16	131.839	1281.18	163.50	0.0000	10.71	118.009	1243.87	49.7	0.4060	1.36250	0.0033183	60.96	0.202	0.0033
FS36	Bleed3.Fl_O	47.40	131.839	1281.18	163.50	0.0000	8.30	123.834	1259.98	49.3	0.3043	1.36250	0.0033183	47.24	0.157	0.0033
FS4	Burner.Fl_O	48.33	128.803	2492.34	139.82	0.0198	12.09	121.646	2459.69	74.6	0.2989	1.29650	0.0033183	47.24	0.157	0.0271
FS45	HPT.Fl_O	64.46	29.914	1629.81	-18.47	0.0148	56.14	26.905	1587.15	265.4	0.4012	1.33274	0.0033183	63.32	0.210	0.0212
FS49	LPT.Fl_O	65.21	6.876	1160.77	-140.80	0.0146	208.52	5.925	1115.83	860.2	0.4718	1.36007	0.0033183	64.06	0.213	0.0210
FS5	TEGV.Fl_O	65.21	6.876	1160.84	-140.80	0.0146	208.52	5.925	1115.89	860.2	0.4718	1.36007	0.0033183	64.06	0.213	0.0210
FS8	Core_Nozz.Fl_O	65.21	6.876	1160.97	-140.80	0.0146	208.53	3.664	980.78	613.4	1.0000	1.36006	0.0033183	64.06	0.213	0.0210
FS17	FanDuctLkg.Fl_O	366.73	7.893	527.69	-4.19	0.0000	688.70	6.552	500.34	2606.7	0.5226	1.40010	0.0000308	366.72	0.011	0.0000
FS171	Bleed15.Fl_O	366.73	7.893	527.69	-4.19	0.0000	688.70	6.367	496.25	2481.9	0.5625	1.40010	0.0000308	366.72	0.011	0.0000
FS172	FanDuct.Fl_O	366.73	7.893	527.69	-4.19	0.0000	688.70	6.367	496.25	2481.9	0.5625	1.40010	0.0000308	366.72	0.011	0.0000
FS173	Byp_Nozz.Fl_O	366.73	7.893	527.69	-4.19	0.0000	688.70	4.168	439.61	2006.9	1.0000	1.40010	0.0000308	366.72	0.011	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	984.46	1.528	0.9073	3782.622	1.1419	0.9127	-8159.8	73.33	30.72
LPC	171.98	2.371	0.8701	3782.622	1.3215	0.8848	-3232.3	4.55	3.56
HPC	83.92	10.759	0.8615	9979.760	2.0843	0.8979	-14699.2	35.30	33.86
HPT	12.09	4.306	0.9067	217.619	1.3581	0.8875	14699.2		
LPT	56.14	4.351	0.9101	88.439	1.4015	0.8925	11392.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1143.84	1.515	0.9092	3746.555	0.0578	0.8607	1.0235	0.9980	0.9905
LPC	139.25	2.369	0.8196	0.999	0.0000	1.2351	1.0017	1.0617	0.0003
HPC	76.33	10.300	0.8704	9713.706	12.6887	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.214	0.9067	1.308	4.2142	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.520	0.9169	0.995	3.5201	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3526.18	10394.4

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4718	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.7242	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10864.3	7106.0	14699.2
LP_Shaft	3570.4	16758.5	11392.4

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3654	953.86	80.68	29.914
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7520	953.86	80.68	6.876
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	920.41	72.40	38.562
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1125.71	123.75	86.396
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	920.41	72.40	38.562
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1281.18	163.50	131.839
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	920.41	72.40	38.562

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	614.68	-2.14	12.253
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.3392	1281.18	163.50	128.803
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.4220	1281.18	163.50	72.238
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1281.18	163.50	131.839
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1281.18	163.50	131.839
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1281.18	163.50	131.839
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	527.69	-4.19	7.893
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	527.69	-4.19	7.893
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	527.69	-4.19	7.893
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	527.69	-4.19	7.893

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2492.31	0.9995	0.0230	0.93512	0.01979

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.988	0.9808	1.0000	0.9800	613.40	1.000	1490.6	3147.7
Byp_Nozz	2.283	0.9815	1.0000	0.9800	2006.86	1.000	1007.6	12911.0

5µm, ISA +36R

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**********************************************************************************************************************************
Date:05/10/13    Time:11:35:50    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 25/ 53/ 2/22    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 469.84    Stator 1 exit: 489.48    Stator 2 inlet: 512.47    Stator 2 exit: 520.65
            Stator 3 inlet: 550.49    Stator 3 exit: 559.30    Stator 4 inlet: 587.15    Stator 4 exit: 595.57
            Stator 5 inlet: 617.26    Stator 5 exit: 625.38            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.35
Fan Bypass Relative Humidity       0.21
LPC Inlet Relative Humidity        2.51
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.01
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          793.07    Fan/LPC Inlet Flow Velocity        490.02
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.46
Ambient Static Temperature     429.85    Fan/LPC Inlet Static Temperature   462.27
Additional Water at LPC Exit   0.0048230

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC     Wfuel       BPR      VTAS      OPR       EPR       PowerSet      T4      T41      T49
 0.780   35000.0    36.00    465.19     8140.7    0.6138    4996.55    5.3274    793.07   31.907     1.687      100.000      2926.9   2748.9   1918.6


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht     FAR        Wc        Ps        Ts      Aphy      MN      gamt        WAR      Wair    WH2O  H2O frac
FS0   Ambient.Fl_O          465.19     5.170    482.28    -15.41  0.0000   1275.13     3.458    429.85    3890.2  0.7800   1.40064  0.0000871    465.15   0.041    0.0001
FS1   Inlet.Fl_O            465.19     5.170    482.28    -15.41  0.0000   1275.13     3.841    442.98    4168.2  0.6653   1.40064  0.0000871    465.15   0.041    0.0001
FS12  Splitter.Fl_02        391.67     5.167    482.28    -15.41  0.0000   1074.15     3.864    443.78    3531.8  0.6579   1.40064  0.0000871    391.64   0.034    0.0001
FS2   Splitter.Fl_01         73.52     5.167    482.28    -15.41  0.0000    201.63     4.456    462.27     830.5  0.4648   1.40064  0.0000871     73.51   0.006    0.0001
FS14  Fan.Fl_O              391.67     8.749    568.25      5.22  0.0000    688.62     7.263    538.83    2606.7  0.5227   1.39944  0.0000871    391.64   0.034    0.0001
FS23  LPC.Fl_O               73.52    12.916    655.07     26.11  0.0000     94.01    11.387    632.00     412.6  0.4284   1.39736  0.0000871     73.51   0.006    0.0001
FS24  VaporIN.Fl_O           73.88    12.916    660.53     -0.14  0.0000     94.85    11.349    636.69     412.6  0.4343   1.39650  0.0049101     73.51   0.361    0.0049
FS25  Bleed2.Fl_O            73.88    12.916    660.53     -0.14  0.0000     94.85    11.349    636.69     412.6  0.4343   1.39650  0.0049101     73.51   0.361    0.0049
FS3   HPC.Fl_O               70.29   164.951   1439.80    196.08  0.0000     10.43   148.634   1401.12      49.7  0.3948   1.35290  0.0049101     69.95   0.343    0.0049
FS36  Bleed3.Fl_O            54.48   164.951   1439.80    196.08  0.0000      8.09   155.477   1417.71      49.3  0.2967   1.35290  0.0049101     54.21   0.266    0.0049
FS4   Burner.Fl_O            55.86   161.152   2926.92    164.50  0.0256     12.10   152.235   2890.13      74.6  0.3013   1.27998  0.0049101     54.21   0.266    0.0354
FS45  HPT.Fl_O               74.40    37.752   1927.83    -21.33  0.0191     55.84    33.999   1879.76     265.4  0.4014   1.31629  0.0049101     72.65   0.357    0.0278
FS49  LPT.Fl_O               75.26     8.712   1386.35   -167.87  0.0189    207.55     7.518   1334.94     860.2  0.4726   1.34306  0.0049101     73.51   0.361    0.0275
FS5   TEGV.Fl_O              75.26     8.712   1386.41   -167.87  0.0189    207.56     7.518   1335.00     860.2  0.4726   1.34306  0.0049101     73.51   0.361    0.0275
FS8   Core_Nozz.Fl_O         75.26     8.712   1386.54   -167.87  0.0189    207.57     4.666   1179.53     613.4  1.0000   1.34305  0.0049101     73.51   0.361    0.0276
FS17  FanDuctLkg.Fl_O        391.67     8.749    568.25      5.22  0.0000    688.62     7.263    538.83    2606.7  0.5227   1.39944  0.0000871    391.64   0.034    0.0001
FS171 Bleed15.Fl_O           391.67     8.749    568.25      5.22  0.0000    688.62     7.058    534.44    2481.9  0.5626   1.39944  0.0000871    391.64   0.034    0.0001
FS172 FanDuct.Fl_O           391.67     8.749    568.25      5.22  0.0000    688.62     7.058    534.44    2481.9  0.5626   1.39944  0.0000871    391.64   0.034    0.0001
FS173 Byp_Nozz.Fl_O          391.67     8.749    568.25      5.22  0.0000    688.62     4.621    473.48    2006.9  1.0000   1.39944  0.0000871    391.64   0.034    0.0001

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR      eff         Nc       TR   efPoly        pwr       SMN      SMW
Fan      1074.15   1.693   0.9110   4121.876   1.1783   0.9173   -11431.7     38.28    23.43
LPC       201.63   2.500   0.8340   4121.876   1.3583   0.8538    -4318.8      2.96     2.22
HPC        94.85  12.771   0.8590  10286.780   2.1798   0.8977   -20011.4     27.32    26.49
HPT        12.10   4.269   0.9122    214.572   1.3415   0.8903    20011.4
LPT        55.84   4.333   0.9169     90.524   1.3871   0.9007    15750.5

TURBOMACHINERY MAP DATA
           WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan      1248.05   1.677   0.9128   4082.574    0.0636      0.8607    1.0235    0.9980    0.9905
LPC       165.22   2.729   0.8330      1.089    0.0000      1.2204    0.8676    1.0013    0.0003
HPC        86.27  12.216   0.8679  10012.541   13.3720      1.0995    1.0494    0.9898    0.9733
HPT         0.96   4.178   0.9121      1.290    4.1781     12.6299    0.9723    1.0000    0.0003
LPT         0.86   3.507   0.9237      1.018    3.5069     65.2590    0.7521    0.9926    0.0005
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===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3890.21	11466.7
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4726	860.21
FanDuct	0.0000	0.5626	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.3274	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11608.6	9053.8	20011.4
LP_Shaft	3974.6	20812.8	15750.5

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.7186	1058.91	97.97	37.752
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.8643	1058.91	97.97	8.712
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1019.81	88.16	46.364
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1259.22	148.98	107.178
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1019.81	88.16	46.364
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1439.80	196.08	164.951
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1019.81	88.16	46.364

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	660.53	-0.14	12.916
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	8.4350	1439.80	196.08	161.152
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	7.3809	1439.80	196.08	90.567
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1439.80	196.08	164.951
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1439.80	196.08	164.951
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1439.80	196.08	164.951
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	568.25	5.22	8.749
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	568.25	5.22	8.749
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	568.25	5.22	8.749
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	568.25	5.22	8.749

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2926.92	0.9995	0.0230	1.38793	0.02560

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.519	0.9810	1.0000	0.9800	613.40	1.000	1626.0	4544.8
Byp_Nozz	2.530	0.9811	1.0000	0.9800	2006.86	1.000	1045.7	15062.6

```
**********************************************************************************************************************************
Date:05/10/13    Time:11:36:21    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 17/ 31/ 1/15    Run by: Philip C Jorgenson      PC:    75
Temperature Stator 1 inlet: 479.71    Stator 1 exit: 496.80    Stator 2 inlet: 517.72    Stator 2 exit: 526.64
            Stator 3 inlet: 551.23    Stator 3 exit: 560.06    Stator 4 inlet: 583.21    Stator 4 exit: 591.31
            Stator 5 inlet: 609.85    Stator 5 exit: 617.42            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.84
Fan Bypass Relative Humidity       0.30
LPC Inlet Relative Humidity        2.04
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.01
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          793.07    Fan/LPC Inlet Flow Velocity        418.70
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.64
Ambient Static Temperature     429.85    Fan/LPC Inlet Static Temperature   467.67
Additional Water at LPC Exit   0.0057213
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	36.00	429.74	6136.7	0.6071	3725.42	5.6454	793.07	26.665	1.344	75.600	2652.3	2494.9	1733.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	429.74	5.170	482.28	-15.41	0.0000	1177.95	3.458	429.85	3593.7	0.7800	1.40064	0.0000871	429.70	0.037	0.0001
FS1	Inlet.Fl_O	429.74	5.170	482.28	-15.41	0.0000	1177.95	4.119	451.93	4168.2	0.5789	1.40064	0.0000871	429.70	0.037	0.0001
FS12	Splitter.Fl_02	365.07	5.167	482.28	-15.41	0.0000	1001.19	4.108	451.64	3531.8	0.5818	1.40064	0.0000871	365.04	0.032	0.0001
FS2	Splitter.Fl_01	64.67	5.167	482.28	-15.41	0.0000	177.35	4.641	467.67	830.5	0.3948	1.40064	0.0000871	64.66	0.006	0.0001
FS14	Fan.Fl_O	365.07	8.053	554.16	1.84	0.0000	688.65	6.685	525.46	2606.7	0.5226	1.39969	0.0000871	365.04	0.032	0.0001
FS23	LPC.Fl_O	64.67	12.480	641.48	22.83	0.0000	84.69	11.317	623.86	412.6	0.3767	1.39774	0.0000871	64.66	0.006	0.0001
FS24	VaporIN.Fl_O	65.04	12.480	648.09	-8.26	0.0000	85.61	11.283	629.79	412.6	0.3825	1.39675	0.0058084	64.66	0.376	0.0058
FS25	Bleed2.Fl_O	65.04	12.480	648.09	-8.26	0.0000	85.61	11.283	629.79	412.6	0.3825	1.39675	0.0058084	64.66	0.376	0.0058
FS3	HPC.Fl_O	61.88	137.851	1355.53	169.01	0.0000	10.67	123.512	1316.79	49.7	0.4048	1.35759	0.0058084	61.53	0.357	0.0058
FS36	Bleed3.Fl_O	47.96	137.851	1355.53	169.01	0.0000	8.27	129.550	1333.52	49.3	0.3036	1.35759	0.0058084	47.68	0.277	0.0058
FS4	Burner.Fl_O	48.99	134.677	2652.25	142.95	0.0217	12.09	127.197	2618.07	74.6	0.2999	1.29008	0.0058084	47.68	0.277	0.0317
FS45	HPT.Fl_O	65.31	31.373	1741.54	-26.03	0.0162	56.06	28.223	1696.70	265.4	0.4019	1.32609	0.0058084	63.90	0.371	0.0252
FS49	LPT.Fl_O	66.07	7.232	1245.33	-157.52	0.0160	208.04	6.236	1197.89	860.2	0.4721	1.35345	0.0058084	64.66	0.376	0.0250
FS5	TEGV.Fl_O	66.07	7.232	1245.40	-157.52	0.0160	208.04	6.236	1197.95	860.2	0.4721	1.35345	0.0058084	64.66	0.376	0.0250
FS8	Core_Nozz.Fl_O	66.07	7.232	1245.53	-157.52	0.0160	208.06	3.861	1055.02	613.4	1.0000	1.35344	0.0058084	64.66	0.376	0.0250
FS17	FanDuctLkg.Fl_O	365.07	8.053	554.16	1.84	0.0000	688.65	6.685	525.46	2606.7	0.5226	1.39969	0.0000871	365.04	0.032	0.0001
FS171	Bleed15.Fl_O	365.07	8.053	554.16	1.84	0.0000	688.65	6.496	521.17	2481.9	0.5626	1.39969	0.0000871	365.04	0.032	0.0001
FS172	FanDuct.Fl_O	365.07	8.053	554.16	1.84	0.0000	688.65	6.496	521.17	2481.9	0.5626	1.39969	0.0000871	365.04	0.032	0.0001
FS173	Byp_Nozz.Fl_O	365.07	8.053	554.16	1.84	0.0000	688.65	4.253	461.71	2006.9	1.0000	1.39969	0.0000871	365.04	0.032	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1001.19	1.558	0.9071	3847.235	1.1491	0.9127	-8907.1	62.06	29.24
LPC	177.35	2.415	0.8671	3847.235	1.3301	0.8824	-3499.0	3.97	3.14
HPC	85.61	11.046	0.8615	10026.648	2.0916	0.8980	-15916.1	34.17	32.82
HPT	12.09	4.293	0.9089	217.630	1.3518	0.8892	15916.2		
LPT	56.06	4.338	0.9132	88.896	1.3957	0.8964	12406.1		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1163.29	1.546	0.9089	3810.552	0.0590	0.8607	1.0235	0.9980	0.9905
LPC	143.42	2.435	0.8209	1.016	0.0000	1.2365	0.9861	1.0563	0.0003
HPC	77.86	10.573	0.8704	9759.344	12.7792	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.202	0.9089	1.308	4.2016	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.511	0.9200	1.000	3.5106	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3593.73	10592.8

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4721	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6454	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11208.0	7458.4	15916.2
LP_Shaft	3709.8	17563.8	12406.1

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3933	1008.84	80.38	31.373
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7609	1008.84	80.38	7.232
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	973.34	71.51	40.062
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1191.00	126.47	90.210
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	973.34	71.51	40.062
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1355.53	169.01	137.851
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	973.34	71.51	40.062

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	648.09	-8.26	12.480
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.4259	1355.53	169.01	134.677
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.4978	1355.53	169.01	75.587
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1355.53	169.01	137.851
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1355.53	169.01	137.851
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1355.53	169.01	137.851
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	554.16	1.84	8.053
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	554.16	1.84	8.053
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	554.16	1.84	8.053
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	554.16	1.84	8.053

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2652.24	0.9995	0.0230	1.03484	0.02170

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.091	0.9813	1.0000	0.9800	613.40	1.000	1543.8	3417.6
Byp_Nozz	2.329	0.9815	1.0000	0.9800	2006.86	1.000	1032.6	13311.9

```
**********************************************************************************************************************************
Date:05/10/13    Time:11:36:52    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 17/ 31/ 1/15    Run by: Philip C Jorgenson      PC:    72
Temperature Stator 1 inlet: 480.66    Stator 1 exit: 497.49    Stator 2 inlet: 518.18    Stator 2 exit: 527.12
            Stator 3 inlet: 551.22    Stator 3 exit: 560.02    Stator 4 inlet: 582.71    Stator 4 exit: 590.77
            Stator 5 inlet: 608.99    Stator 5 exit: 616.49            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.72
Fan Bypass Relative Humidity       0.31
LPC Inlet Relative Humidity        1.99
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.01
Drop Diameter               0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          793.07    Fan/LPC Inlet Flow Velocity        410.02
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.66
Ambient Static Temperature     429.85    Fan/LPC Inlet Static Temperature   468.27
Additional Water at LPC Exit   0.0058490
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	36.00	425.58	5909.0	0.6075	3589.93	5.6990	793.07	26.043	1.306	72.700	2622.0	2466.9	1713.6

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	425.58	5.170	482.28	-15.41	0.0000	1166.55	3.458	429.85	3559.0	0.7800	1.40064	0.0000871	425.54	0.037	0.0001
FS1	Inlet.Fl_O	425.58	5.170	482.28	-15.41	0.0000	1166.55	4.147	452.79	4168.2	0.5700	1.40064	0.0000871	425.54	0.037	0.0001
FS12	Splitter.Fl_02	362.05	5.167	482.28	-15.41	0.0000	992.91	4.132	452.39	3531.8	0.5741	1.40064	0.0000871	362.02	0.032	0.0001
FS2	Splitter.Fl_01	63.53	5.167	482.28	-15.41	0.0000	174.23	4.661	468.27	830.5	0.3864	1.40064	0.0000871	63.52	0.006	0.0001
FS14	Fan.Fl_O	362.05	7.974	552.47	1.43	0.0000	688.66	6.619	523.86	2606.7	0.5226	1.39972	0.0000871	362.02	0.032	0.0001
FS23	LPC.Fl_O	63.53	12.404	639.98	22.47	0.0000	83.61	11.281	622.92	412.6	0.3709	1.39779	0.0000871	63.52	0.006	0.0001
FS24	VaporIN.Fl_O	63.90	12.404	646.75	-9.31	0.0000	84.54	11.248	629.02	412.6	0.3768	1.39677	0.0059361	63.52	0.377	0.0059
FS25	Bleed2.Fl_O	63.90	12.404	646.75	-9.31	0.0000	84.54	11.248	629.02	412.6	0.3768	1.39677	0.0059361	63.52	0.377	0.0059
FS3	HPC.Fl_O	60.80	134.635	1346.14	165.85	0.0000	10.69	120.549	1307.39	49.7	0.4060	1.35813	0.0059361	60.44	0.359	0.0059
FS36	Bleed3.Fl_O	47.12	134.635	1346.14	165.85	0.0000	8.29	126.482	1324.13	49.3	0.3044	1.35813	0.0059361	46.84	0.278	0.0059
FS4	Burner.Fl_O	48.12	131.534	2622.01	140.37	0.0213	12.09	124.230	2588.10	74.6	0.2997	1.29121	0.0059361	46.84	0.278	0.0313
FS45	HPT.Fl_O	64.15	30.622	1721.32	-26.72	0.0159	56.08	27.542	1676.78	265.4	0.4020	1.32721	0.0059361	62.78	0.373	0.0250
FS49	LPT.Fl_O	64.90	7.059	1230.27	-156.54	0.0157	208.08	6.086	1183.27	860.2	0.4721	1.35458	0.0059361	63.52	0.377	0.0248
FS5	TEGV.Fl_O	64.90	7.059	1230.34	-156.54	0.0157	208.09	6.086	1183.34	860.2	0.4721	1.35458	0.0059361	63.52	0.377	0.0248
FS8	Core_Nozz.Fl_O	64.90	7.059	1230.47	-156.54	0.0157	208.10	3.768	1041.79	613.4	1.0000	1.35457	0.0059361	63.52	0.377	0.0248
FS17	FanDuctLkg.Fl_O	362.05	7.974	552.47	1.43	0.0000	688.66	6.619	523.86	2606.7	0.5226	1.39972	0.0000871	362.02	0.032	0.0001
FS171	Bleed15.Fl_O	362.05	7.974	552.47	1.43	0.0000	688.66	6.432	519.59	2481.9	0.5626	1.39972	0.0000871	362.02	0.032	0.0001
FS172	FanDuct.Fl_O	362.05	7.974	552.47	1.43	0.0000	688.66	6.432	519.59	2481.9	0.5626	1.39972	0.0000871	362.02	0.032	0.0001
FS173	Byp_Nozz.Fl_O	362.05	7.974	552.47	1.43	0.0000	688.66	4.211	460.30	2006.9	1.0000	1.39972	0.0000871	362.02	0.032	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	992.91	1.543	0.9070	3816.307	1.1456	0.9125	-8626.0	66.53	29.96
LPC	174.23	2.400	0.8685	3816.307	1.3270	0.8835	-3405.0	4.24	3.34
HPC	84.54	10.854	0.8615	9996.637	2.0814	0.8978	-15452.3	35.00	33.60
HPT	12.09	4.295	0.9084	218.001	1.3529	0.8888	15452.3		
LPT	56.08	4.338	0.9125	88.698	1.3965	0.8956	12031.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1153.67	1.531	0.9088	3779.919	0.0584	0.8607	1.0235	0.9980	0.9905
LPC	141.42	2.403	0.8202	1.008	0.0000	1.2319	0.9980	1.0588	0.0003
HPC	76.89	10.390	0.8705	9730.134	12.7112	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.204	0.9084	1.310	4.2041	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.511	0.9193	0.998	3.5106	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3558.95	10490.3
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4721	860.21
FanDuct	0.0000	0.5626	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6990	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11162.9	7270.2	15452.3
LP_Shaft	3680.0	17170.8	12031.0

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3515	1003.29	78.27	30.622
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7476	1003.29	78.27	7.059
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	968.20	69.52	39.295
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1183.41	123.82	88.187
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	968.20	69.52	39.295
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1346.14	165.85	134.635
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	968.20	69.52	39.295

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	646.75	-9.31	12.404
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.2962	1346.14	165.85	131.534
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.3843	1346.14	165.85	73.813
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1346.14	165.85	134.635
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1346.14	165.85	134.635
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1346.14	165.85	134.635
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	552.47	1.43	7.974
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	552.47	1.43	7.974
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	552.47	1.43	7.974
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	552.47	1.43	7.974

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2621.99	0.9995	0.0230	0.99720	0.02129

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.041	0.9811	1.0000	0.9800	613.40	1.000	1534.7	3285.5
Byp_Nozz	2.306	0.9815	1.0000	0.9800	2006.86	1.000	1031.0	13113.7

```
**********************************************************************************************************************************
Date:05/10/13    Time:11:37:23    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    69
Temperature Stator 1 inlet: 481.53    Stator 1 exit: 498.10    Stator 2 inlet: 518.55    Stator 2 exit: 527.48
            Stator 3 inlet: 551.10    Stator 3 exit: 559.86    Stator 4 inlet: 582.10    Stator 4 exit: 590.10
            Stator 5 inlet: 607.99    Stator 5 exit: 615.43            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.62
Fan Bypass Relative Humidity       0.33
LPC Inlet Relative Humidity        1.95
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.01
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          793.07    Fan/LPC Inlet Flow Velocity        401.52
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.68
Ambient Static Temperature     429.85    Fan/LPC Inlet Static Temperature   468.84
Additional Water at LPC Exit   0.0059723
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	36.00	421.59	5690.4	0.6082	3460.64	5.7560	793.07	25.434	1.269	69.900	2592.8	2439.9	1694.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	421.59	5.170	482.28	-15.41	0.0000	1155.62	3.458	429.85	3525.6	0.7800	1.40064	0.0000871	421.55	0.037	0.0001
FS1	Inlet.Fl_O	421.59	5.170	482.28	-15.41	0.0000	1155.62	4.173	453.60	4168.2	0.5617	1.40064	0.0000871	421.55	0.037	0.0001
FS12	Splitter.Fl_02	359.19	5.167	482.28	-15.41	0.0000	985.07	4.154	453.09	3531.8	0.5670	1.40064	0.0000871	359.16	0.031	0.0001
FS2	Splitter.Fl_01	62.40	5.167	482.28	-15.41	0.0000	171.14	4.681	468.84	830.5	0.3782	1.40064	0.0000871	62.40	0.005	0.0001
FS14	Fan.Fl_O	359.19	7.899	550.83	1.04	0.0000	688.66	6.557	522.30	2606.7	0.5226	1.39974	0.0000871	359.16	0.031	0.0001
FS23	LPC.Fl_O	62.40	12.317	638.37	22.09	0.0000	82.60	11.231	621.82	412.6	0.3656	1.39783	0.0000871	62.40	0.005	0.0001
FS24	VaporIN.Fl_O	62.77	12.317	645.30	-10.36	0.0000	83.55	11.199	628.09	412.6	0.3715	1.39679	0.0060594	62.40	0.378	0.0060
FS25	Bleed2.Fl_O	62.77	12.317	645.30	-10.36	0.0000	83.55	11.199	628.09	412.6	0.3715	1.39679	0.0060594	62.40	0.378	0.0060
FS3	HPC.Fl_O	59.73	131.488	1336.96	162.78	0.0000	10.72	117.652	1298.21	49.7	0.4072	1.35866	0.0060594	59.37	0.360	0.0060
FS36	Bleed3.Fl_O	46.29	131.488	1336.96	162.78	0.0000	8.31	123.483	1314.94	49.3	0.3052	1.35866	0.0060594	46.01	0.279	0.0060
FS4	Burner.Fl_O	47.25	128.460	2592.80	137.84	0.0209	12.09	121.323	2559.17	74.6	0.2996	1.29231	0.0060594	46.01	0.279	0.0310
FS45	HPT.Fl_O	63.00	29.887	1701.78	-27.43	0.0156	56.11	26.877	1657.60	265.4	0.4021	1.32831	0.0060594	61.67	0.374	0.0247
FS49	LPT.Fl_O	63.74	6.890	1215.78	-155.62	0.0154	208.13	5.940	1169.21	860.2	0.4720	1.35567	0.0060594	62.40	0.378	0.0245
FS5	TEGV.Fl_O	63.74	6.890	1215.85	-155.62	0.0154	208.14	5.940	1169.28	860.2	0.4720	1.35566	0.0060594	62.40	0.378	0.0245
FS8	Core_Nozz.Fl_O	63.74	6.890	1215.98	-155.62	0.0154	208.15	3.676	1029.07	613.4	1.0000	1.35565	0.0060594	62.40	0.378	0.0245
FS17	FanDuctLkg.Fl_O	359.19	7.899	550.83	1.04	0.0000	688.66	6.557	522.30	2606.7	0.5226	1.39974	0.0000871	359.16	0.031	0.0001
FS171	Bleed15.Fl_O	359.19	7.899	550.83	1.04	0.0000	688.66	6.372	518.04	2481.9	0.5626	1.39974	0.0000871	359.16	0.031	0.0001
FS172	FanDuct.Fl_O	359.19	7.899	550.83	1.04	0.0000	688.66	6.372	518.04	2481.9	0.5626	1.39974	0.0000871	359.16	0.031	0.0001
FS173	Byp_Nozz.Fl_O	359.19	7.899	550.83	1.04	0.0000	688.66	4.172	458.94	2006.9	1.0000	1.39974	0.0000871	359.16	0.031	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	985.07	1.529	0.9073	3785.224	1.1422	0.9127	-8357.7	72.77	30.66
LPC	171.14	2.384	0.8695	3785.224	1.3237	0.8843	-3310.5	4.53	3.55
HPC	83.55	10.676	0.8616	9968.416	2.0718	0.8977	-15004.3	35.81	34.34
HPT	12.09	4.298	0.9079	218.363	1.3539	0.8884	15004.3		
LPT	56.11	4.338	0.9119	88.479	1.3972	0.8947	11668.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1144.55	1.517	0.9091	3749.132	0.0579	0.8607	1.0235	0.9980	0.9905
LPC	139.41	2.371	0.8196	1.000	0.0000	1.2275	1.0090	1.0608	0.0003
HPC	75.98	10.220	0.8705	9702.665	12.6468	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.207	0.9078	1.312	4.2068	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.510	0.9186	0.995	3.5104	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3525.61	10392.0

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.7560	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11118.9	7087.4	15004.3
LP_Shaft	3650.0	16789.8	11668.2

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3101	997.80	76.21	29.887
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7345	997.80	76.21	6.890
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	963.09	67.55	38.534
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1175.95	121.22	86.203
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	963.09	67.55	38.534
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1336.96	162.78	131.488
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	963.09	67.55	38.534

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	645.30	-10.36	12.317
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.1676	1336.96	162.78	128.460
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.2718	1336.96	162.78	72.076
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1336.96	162.78	131.488
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1336.96	162.78	131.488
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1336.96	162.78	131.488
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	550.83	1.04	7.899
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	550.83	1.04	7.899
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	550.83	1.04	7.899
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	550.83	1.04	7.899

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2592.78	0.9995	0.0230	0.96129	0.02089

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.992	0.9809	1.0000	0.9800	613.40	1.000	1525.9	3156.7
Byp_Nozz	2.284	0.9815	1.0000	0.9800	2006.86	1.000	1029.5	12925.7

10μm, ISA +18R

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**********************************************************************************************************************************
Date:05/13/13    Time:07:00:59    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 26/ 40/ 1/24    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 449.14    Stator 1 exit: 467.80    Stator 2 inlet: 489.45    Stator 2 exit: 496.80
            Stator 3 inlet: 525.56    Stator 3 exit: 533.65    Stator 4 inlet: 560.59    Stator 4 exit: 568.37
            Stator 5 inlet: 589.23    Stator 5 exit: 596.81            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.11
Fan Bypass Relative Humidity       0.16
LPC Inlet Relative Humidity        2.31
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          776.30    Fan/LPC Inlet Flow Velocity        483.02
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.45
Ambient Static Temperature     411.85    Fan/LPC Inlet Static Temperature   442.65
Additional Water at LPC Exit  0.0005921
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	475.55	8103.9	0.5996	4859.48	5.2966	776.30	31.984	1.684	100.000	2818.7	2645.8	1838.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	475.55	5.170	462.10	-19.92	0.0000	1275.94	3.458	411.85	3892.5	0.7800	1.40081	0.0000308	475.53	0.015	0.0000
FS1	Inlet.Fl_O	475.55	5.170	462.10	-19.92	0.0000	1275.94	3.839	424.35	4168.2	0.6661	1.40081	0.0000308	475.53	0.015	0.0000
FS12	Splitter.Fl_02	400.02	5.167	462.10	-19.92	0.0000	1073.83	3.865	425.25	3531.8	0.6574	1.40081	0.0000308	400.01	0.012	0.0000
FS2	Splitter.Fl_01	75.52	5.167	462.10	-19.92	0.0000	202.74	4.446	442.65	830.5	0.4682	1.40081	0.0000308	75.52	0.002	0.0000
FS14	Fan.Fl_O	400.02	8.746	544.46	-0.17	0.0000	688.68	7.260	516.25	2606.7	0.5226	1.39985	0.0000308	400.01	0.012	0.0000
FS23	LPC.Fl_O	75.52	12.696	625.54	19.32	0.0000	96.01	11.117	602.32	412.6	0.4399	1.39818	0.0000308	75.52	0.002	0.0000
FS24	VaporIN.Fl_O	75.57	12.696	626.30	16.10	0.0000	96.12	11.112	602.96	412.6	0.4407	1.39808	0.0006230	75.52	0.047	0.0006
FS25	Bleed2.Fl_O	75.57	12.696	626.30	16.10	0.0000	96.12	11.112	602.96	412.6	0.4407	1.39808	0.0006230	75.52	0.047	0.0006
FS3	HPC.Fl_O	71.90	165.353	1379.91	204.14	0.0000	10.42	149.090	1342.75	49.7	0.3930	1.35701	0.0006230	71.86	0.045	0.0006
FS36	Bleed3.Fl_O	55.73	165.353	1379.91	204.14	0.0000	8.08	155.906	1358.69	49.3	0.2955	1.35701	0.0006230	55.69	0.035	0.0006
FS4	Burner.Fl_O	57.08	161.545	2818.73	173.93	0.0242	12.10	152.607	2782.95	74.6	0.3004	1.28459	0.0006230	55.69	0.035	0.0297
FS45	HPT.Fl_O	76.03	37.754	1847.79	-4.33	0.0181	55.86	34.006	1801.32	265.4	0.4003	1.32089	0.0006230	74.64	0.046	0.0225
FS49	LPT.Fl_O	76.92	8.680	1323.99	-144.26	0.0179	208.07	7.487	1274.25	860.2	0.4723	1.34801	0.0006230	75.52	0.047	0.0223
FS5	TEGV.Fl_O	76.92	8.680	1324.05	-144.26	0.0179	208.07	7.487	1274.32	860.2	0.4723	1.34800	0.0006230	75.52	0.047	0.0223
FS8	Core_Nozz.Fl_O	76.92	8.680	1324.18	-144.26	0.0179	208.08	4.642	1124.14	613.4	1.0000	1.34799	0.0006230	75.52	0.047	0.0223
FS17	FanDuctLkg.Fl_O	400.02	8.746	544.46	-0.17	0.0000	688.68	7.260	516.25	2606.7	0.5226	1.39985	0.0000308	400.01	0.012	0.0000
FS171	Bleed15.Fl_O	400.02	8.746	544.46	-0.17	0.0000	688.68	7.055	512.04	2481.9	0.5625	1.39985	0.0000308	400.01	0.012	0.0000
FS172	FanDuct.Fl_O	400.02	8.746	544.46	-0.17	0.0000	688.68	7.055	512.04	2481.9	0.5625	1.39985	0.0000308	400.01	0.012	0.0000
FS173	Byp_Nozz.Fl_O	400.02	8.746	544.46	-0.17	0.0000	688.68	4.619	453.61	2006.9	1.0000	1.39985	0.0000308	400.01	0.012	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1073.83	1.693	0.9109	4120.603	1.1782	0.9173	-11178.1	38.40	23.46
LPC	202.74	2.457	0.8276	4120.603	1.3537	0.8478	-4193.0	2.96	2.22
HPC	96.12	13.024	0.8586	10338.629	2.2033	0.8979	-19617.5	26.39	25.59
HPT	12.10	4.279	0.9118	213.984	1.3467	0.8911	19617.5		
LPT	55.86	4.349	0.9155	90.481	1.3922	0.8986	15371.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1247.69	1.677	0.9128	4081.314	0.0636	0.8607	1.0235	0.9980	0.9905
LPC	165.10	2.727	0.8329	1.088	0.0000	1.2279	0.8436	0.9936	0.0003
HPC	87.42	12.457	0.8675	10063.008	13.4618	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.188	0.9118	1.286	4.1881	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.519	0.9223	1.018	3.5192	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3892.49	11474.2

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4723	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2966	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11360.8	9069.2	19617.5
LP_Shaft	3889.4	20756.6	15371.0

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.7809	1011.00	110.12	37.754
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.8842	1011.00	110.12	8.680
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	973.18	100.72	46.281
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1204.95	159.01	107.344
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	973.18	100.72	46.281
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1379.91	204.14	165.353
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	973.18	100.72	46.281

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	626.30	16.10	12.696
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	8.6285	1379.91	204.14	161.545
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	7.5501	1379.91	204.14	90.736
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1379.91	204.14	165.353
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1379.91	204.14	165.353
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1379.91	204.14	165.353
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	544.46	-0.17	8.746
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	544.46	-0.17	8.746
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	544.46	-0.17	8.746
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	544.46	-0.17	8.746

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2818.73	0.9995	0.0230	1.34986	0.02424

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.510	0.9810	1.0000	0.9800	613.40	1.000	1588.1	4522.9
Byp_Nozz	2.529	0.9811	1.0000	0.9800	2006.86	1.000	1023.5	15055.1

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*******************************************************************************************************************************************
Date:05/13/13    Time:07:01:34    Model:                                       Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 20/ 34/ 1/18    Run by: Philip C Jorgenson      PC:    75
Temperature Stator 1 inlet: 458.76    Stator 1 exit: 475.02    Stator 2 inlet: 494.78    Stator 2 exit: 503.08
            Stator 3 inlet: 526.68    Stator 3 exit: 534.96    Stator 4 inlet: 557.27    Stator 4 exit: 564.84
            Stator 5 inlet: 582.66    Stator 5 exit: 589.79             Unblocked   Percent Blockage: 0.00
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Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.58		
Fan Bypass Relative Humidity	0.24		
LPC Inlet Relative Humidity	1.85		
LPC Exit Relative Humidity	0.02		
HPC Relative Humidity	0.00		
Drop Diameter	0.0000100	Inlet Length	40.00
Ambient Flow Velocity	776.30	Fan/LPC Inlet Flow Velocity	414.05
Ambient Static Pressure	3.46	Fan/LPC Inlet Static Pressure	4.63
Ambient Static Temperature	411.85	Fan/LPC Inlet Static Temperature	447.81
Additional Water at LPC Exit	0.0007012		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	439.16	6089.2	0.5939	3616.23	5.5902	776.30	26.743	1.342	75.600	2544.9	2393.3	1656.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	439.16	5.170	462.10	-19.92	0.0000	1178.30	3.458	411.85	3594.6	0.7800	1.40081	0.0000308	439.15	0.014	0.0000
FS1	Inlet.Fl_O	439.16	5.170	462.10	-19.92	0.0000	1178.30	4.118	432.99	4168.2	0.5791	1.40081	0.0000308	439.15	0.014	0.0000
FS12	Splitter.Fl_02	372.52	5.167	462.10	-19.92	0.0000	1000.00	4.112	432.84	3531.8	0.5806	1.40081	0.0000308	372.51	0.011	0.0000
FS2	Splitter.Fl_01	66.64	5.167	462.10	-19.92	0.0000	178.88	4.630	447.81	830.5	0.3990	1.40081	0.0000308	66.64	0.002	0.0000
FS14	Fan.Fl_O	372.52	8.041	530.78	-3.45	0.0000	688.70	6.675	503.27	2606.7	0.5226	1.40006	0.0000308	372.51	0.011	0.0000
FS23	LPC.Fl_O	66.64	12.339	612.64	16.22	0.0000	86.26	11.141	595.06	412.6	0.3850	1.39851	0.0000308	66.64	0.002	0.0000
FS24	VaporIN.Fl_O	66.68	12.339	613.54	12.40	0.0000	86.38	11.136	595.86	412.6	0.3858	1.39838	0.0007320	66.64	0.049	0.0007
FS25	Bleed2.Fl_O	66.68	12.339	613.54	12.40	0.0000	86.38	11.136	595.86	412.6	0.3858	1.39838	0.0007320	66.64	0.049	0.0007
FS3	HPC.Fl_O	63.45	138.259	1294.64	181.41	0.0000	10.66	123.964	1257.53	49.7	0.4029	1.36209	0.0007320	63.40	0.046	0.0007
FS36	Bleed3.Fl_O	49.17	138.259	1294.64	181.41	0.0000	8.26	129.978	1273.53	49.3	0.3022	1.36209	0.0007320	49.14	0.036	0.0007
FS4	Burner.Fl_O	50.18	135.075	2544.87	156.49	0.0204	12.09	127.582	2511.72	74.6	0.2989	1.29491	0.0007320	49.14	0.036	0.0254
FS45	HPT.Fl_O	66.91	31.402	1663.71	-4.74	0.0153	56.08	28.257	1620.49	265.4	0.4006	1.33111	0.0007320	65.86	0.048	0.0192
FS49	LPT.Fl_O	67.69	7.208	1185.12	-129.76	0.0151	208.60	6.213	1139.40	860.2	0.4719	1.35854	0.0007320	66.64	0.049	0.0190
FS5	TEGV.Fl_O	67.69	7.208	1185.18	-129.76	0.0151	208.60	6.213	1139.46	860.2	0.4719	1.35854	0.0007320	66.64	0.049	0.0190
FS8	Core_Nozz.Fl_O	67.69	7.208	1185.32	-129.76	0.0151	208.62	3.843	1001.94	613.4	1.0000	1.35853	0.0007320	66.64	0.049	0.0190
FS17	FanDuctLkg.Fl_O	372.52	8.041	530.78	-3.45	0.0000	688.70	6.675	503.27	2606.7	0.5226	1.40006	0.0000308	372.51	0.011	0.0000
FS171	Bleed15.Fl_O	372.52	8.041	530.78	-3.45	0.0000	688.70	6.487	499.16	2481.9	0.5625	1.40006	0.0000308	372.51	0.011	0.0000
FS172	FanDuct.Fl_O	372.52	8.041	530.78	-3.45	0.0000	688.70	6.487	499.16	2481.9	0.5625	1.40006	0.0000308	372.51	0.011	0.0000
FS173	Byp_Nozz.Fl_O	372.52	8.041	530.78	-3.45	0.0000	688.70	4.247	442.19	2006.9	1.0000	1.40006	0.0000308	372.51	0.011	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1000.00	1.556	0.9070	3842.664	1.1486	0.9126	-8679.2	62.39	29.35
LPC	178.88	2.388	0.8665	3842.664	1.3258	0.8817	-3406.9	4.01	3.17
HPC	86.38	11.205	0.8614	10048.977	2.1101	0.8983	-15559.2	33.35	32.05
HPT	12.09	4.301	0.9079	216.653	1.3566	0.8882	15559.2		
LPT	56.08	4.356	0.9114	88.923	1.4011	0.8940	12086.1		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1161.90	1.543	0.9088	3806.024	0.0589	0.8607	1.0235	0.9980	0.9905
LPC	143.12	2.430	0.8208	1.015	0.0000	1.2499	0.9703	1.0557	0.0003
HPC	78.56	10.724	0.8704	9781.078	12.8486	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.210	0.9079	1.302	4.2099	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.524	0.9182	1.000	3.5244	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3594.62	10596.2

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4719	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5902	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10929.4	7476.9	15559.2
LP_Shaft	3627.0	17501.2	12086.1

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.4540	960.29	96.90	31.402
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7802	960.29	96.90	7.208
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	926.10	88.45	40.042
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1135.87	140.85	90.409
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	926.10	88.45	40.042
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1294.64	181.41	138.259
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	926.10	88.45	40.042

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	613.54	12.40	12.339
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.6141	1294.64	181.41	135.075
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.6625	1294.64	181.41	75.774
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1294.64	181.41	138.259
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1294.64	181.41	138.259
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1294.64	181.41	138.259
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	530.78	-3.45	8.041
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	530.78	-3.45	8.041
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	530.78	-3.45	8.041
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	530.78	-3.45	8.041

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2544.85	0.9995	0.0230	1.00451	0.02044

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.085	0.9813	1.0000	0.9800	613.40	1.000	1504.8	3401.9
Byp_Nozz	2.325	0.9815	1.0000	0.9800	2006.86	1.000	1010.6	13283.5

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Date:05/13/13 Time:07:02:31 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 29/ 57/ 2/26 Run by: Philip C Jorgenson PC: 72
Temperature Stator 1 inlet: 459.69 Stator 1 exit: 475.70 Stator 2 inlet: 495.26 Stator 2 exit: 503.59
Stator 3 inlet: 526.72 Stator 3 exit: 534.99 Stator 4 inlet: 556.85 Stator 4 exit: 564.39
Stator 5 inlet: 581.90 Stator 5 exit: 588.97 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.46		
Fan Bypass Relative Humidity	0.25		
LPC Inlet Relative Humidity	1.81		
LPC Exit Relative Humidity	0.02		
HPC Relative Humidity	0.00		
Drop Diameter	0.0000100	Inlet Length	40.00
Ambient Flow Velocity	776.30	Fan/LPC Inlet Flow Velocity	405.65
Ambient Static Pressure	3.46	Fan/LPC Inlet Static Pressure	4.65
Ambient Static Temperature	411.85	Fan/LPC Inlet Static Temperature	448.38
Additional Water at LPC Exit	0.0007169		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	434.92	5860.9	0.5944	3483.94	5.6404	776.30	26.121	1.304	72.700	2514.7	2364.8	1636.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	434.92	5.170	462.10	-19.92	0.0000	1166.92	3.458	411.85	3559.9	0.7800	1.40081	0.0000308	434.90	0.013	0.0000
FS1	Inlet.Fl_O	434.92	5.170	462.10	-19.92	0.0000	1166.92	4.146	433.82	4168.2	0.5702	1.40081	0.0000308	434.90	0.013	0.0000
FS12	Splitter.Fl_02	369.42	5.167	462.10	-19.92	0.0000	991.69	4.136	433.57	3531.8	0.5729	1.40081	0.0000308	369.41	0.011	0.0000
FS2	Splitter.Fl_01	65.50	5.167	462.10	-19.92	0.0000	175.82	4.651	448.38	830.5	0.3907	1.40081	0.0000308	65.49	0.002	0.0000
FS14	Fan.Fl_O	369.42	7.962	529.14	-3.85	0.0000	688.70	6.609	501.71	2606.7	0.5226	1.40008	0.0000308	369.41	0.011	0.0000
FS23	LPC.Fl_O	65.50	12.273	611.23	15.88	0.0000	85.14	11.116	594.22	412.6	0.3790	1.39854	0.0000308	65.49	0.002	0.0000
FS24	VaporIN.Fl_O	65.54	12.273	612.15	11.97	0.0000	85.26	11.111	595.04	412.6	0.3797	1.39842	0.0007477	65.49	0.049	0.0007
FS25	Bleed2.Fl_O	65.54	12.273	612.15	11.97	0.0000	85.26	11.111	595.04	412.6	0.3797	1.39842	0.0007477	65.49	0.049	0.0007
FS3	HPC.Fl_O	62.36	135.046	1285.16	178.88	0.0000	10.68	121.002	1248.06	49.7	0.4041	1.36267	0.0007477	62.32	0.047	0.0007
FS36	Bleed3.Fl_O	48.33	135.046	1285.16	178.88	0.0000	8.28	126.913	1264.06	49.3	0.3030	1.36267	0.0007477	48.30	0.036	0.0007
FS4	Burner.Fl_O	49.30	131.936	2514.71	154.51	0.0200	12.09	124.616	2481.86	74.6	0.2987	1.29608	0.0007477	48.30	0.036	0.0249
FS45	HPT.Fl_O	65.74	30.655	1643.61	-4.82	0.0150	56.11	27.581	1600.75	265.4	0.4006	1.33230	0.0007477	64.73	0.048	0.0189
FS49	LPT.Fl_O	66.51	7.036	1170.20	-128.19	0.0148	208.66	6.064	1124.92	860.2	0.4718	1.35969	0.0007477	65.49	0.049	0.0187
FS5	TEGV.Fl_O	66.51	7.036	1170.27	-128.19	0.0148	208.66	6.064	1124.99	860.2	0.4718	1.35969	0.0007477	65.49	0.049	0.0187
FS8	Core_Nozz.Fl_O	66.51	7.036	1170.40	-128.19	0.0148	208.67	3.750	988.88	613.4	1.0000	1.35968	0.0007477	65.49	0.049	0.0187
FS17	FanDuctLkg.Fl_O	369.42	7.962	529.14	-3.85	0.0000	688.70	6.609	501.71	2606.7	0.5226	1.40008	0.0000308	369.41	0.011	0.0000
FS171	Bleed15.Fl_O	369.42	7.962	529.14	-3.85	0.0000	688.70	6.423	497.62	2481.9	0.5625	1.40008	0.0000308	369.41	0.011	0.0000
FS172	FanDuct.Fl_O	369.42	7.962	529.14	-3.85	0.0000	688.70	6.423	497.62	2481.9	0.5625	1.40008	0.0000308	369.41	0.011	0.0000
FS173	Byp_Nozz.Fl_O	369.42	7.962	529.14	-3.85	0.0000	688.70	4.205	440.82	2006.9	1.0000	1.40008	0.0000308	369.41	0.011	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	991.69	1.541	0.9070	3811.543	1.1451	0.9125	-8401.7	67.45	30.07
LPC	175.82	2.375	0.8686	3811.543	1.3227	0.8835	-3317.0	4.29	3.37
HPC	85.26	11.004	0.8615	10017.646	2.0994	0.8982	-15101.9	34.20	32.84
HPT	12.09	4.304	0.9073	217.022	1.3577	0.8878	15101.9		
LPT	56.11	4.357	0.9107	88.741	1.4019	0.8932	11718.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1152.24	1.528	0.9089	3775.200	0.0583	0.8607	1.0235	0.9980	0.9905
LPC	141.11	2.398	0.8201	1.007	0.0000	1.2459	0.9834	1.0591	0.0003
HPC	77.55	10.532	0.8704	9750.582	12.7785	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.212	0.9073	1.304	4.2124	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.525	0.9175	0.998	3.5247	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3559.91	10493.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4718	860.21
FanDuct	0.0000	0.5625	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6404	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10883.0	7288.2	15101.9
LP_Shaft	3597.7	17107.8	11718.7

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.4120	954.68	95.42	30.655
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.7668	954.68	95.42	7.036
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	920.90	87.08	39.283
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1128.21	138.82	88.392
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	920.90	87.08	39.283
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1285.16	178.88	135.046
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	920.90	87.08	39.283

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	612.15	11.97	12.273
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	7.4836	1285.16	178.88	131.936
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	6.5483	1285.16	178.88	74.003
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1285.16	178.88	135.046
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1285.16	178.88	135.046
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1285.16	178.88	135.046
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	529.14	-3.85	7.962
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	529.14	-3.85	7.962
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	529.14	-3.85	7.962
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	529.14	-3.85	7.962

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2514.69	0.9995	0.0230	0.96776	0.02004

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.035	0.9811	1.0000	0.9800	613.40	1.000	1495.5	3270.5
Byp_Nozz	2.302	0.9815	1.0000	0.9800	2006.86	1.000	1009.0	13084.3

Date:05/13/13 Time:07:03:22 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 38/ 52/ 1/36 Run by: Philip C Jorgenson PC: 69
Temperature Stator 1 inlet: 460.53 Stator 1 exit: 476.29 Stator 2 inlet: 495.63 Stator 2 exit: 503.96
Stator 3 inlet: 526.63 Stator 3 exit: 534.86 Stator 4 inlet: 556.28 Stator 4 exit: 563.77
Stator 5 inlet: 580.96 Stator 5 exit: 587.97 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.36		
Fan Bypass Relative Humidity	0.26		
LPC Inlet Relative Humidity	1.77		
LPC Exit Relative Humidity	0.02		
HPC Relative Humidity	0.00		
Drop Diameter	0.0000100	Inlet Length	40.00
Ambient Flow Velocity	776.30	Fan/LPC Inlet Flow Velocity	397.39
Ambient Static Pressure	3.46	Fan/LPC Inlet Static Pressure	4.67
Ambient Static Temperature	411.85	Fan/LPC Inlet Static Temperature	448.93
Additional Water at LPC Exit	0.0007329		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	430.85	5642.7	0.5952	3358.54	5.6945	776.30	25.516	1.267	69.900	2486.0	2338.4	1617.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	430.85	5.170	462.10	-19.92	0.0000	1156.02	3.458	411.85	3526.6	0.7800	1.40081	0.0000308	430.84	0.013	0.0000
FS1	Inlet.Fl_O	430.85	5.170	462.10	-19.92	0.0000	1156.02	4.172	434.59	4168.2	0.5619	1.40081	0.0000308	430.84	0.013	0.0000
FS12	Splitter.Fl_02	366.49	5.167	462.10	-19.92	0.0000	983.83	4.158	434.23	3531.8	0.5658	1.40081	0.0000308	366.48	0.011	0.0000
FS2	Splitter.Fl_01	64.36	5.167	462.10	-19.92	0.0000	172.77	4.671	448.93	830.5	0.3825	1.40081	0.0000308	64.36	0.002	0.0000
FS14	Fan.Fl_O	366.49	7.887	527.56	-4.22	0.0000	688.70	6.547	500.21	2606.7	0.5226	1.40011	0.0000308	366.48	0.011	0.0000
FS23	LPC.Fl_O	64.36	12.191	609.67	15.50	0.0000	84.12	11.072	593.17	412.6	0.3735	1.39858	0.0000308	64.36	0.002	0.0000
FS24	VaporIN.Fl_O	64.41	12.191	610.61	11.51	0.0000	84.24	11.067	594.02	412.6	0.3743	1.39845	0.0007638	64.36	0.049	0.0008
FS25	Bleed2.Fl_O	64.41	12.191	610.61	11.51	0.0000	84.24	11.067	594.02	412.6	0.3743	1.39845	0.0007638	64.36	0.049	0.0008
FS3	HPC.Fl_O	61.28	131.915	1275.96	176.42	0.0000	10.71	118.122	1238.88	49.7	0.4052	1.36324	0.0007638	61.24	0.047	0.0008
FS36	Bleed3.Fl_O	47.49	131.915	1275.96	176.42	0.0000	8.30	123.930	1254.88	49.3	0.3038	1.36324	0.0007638	47.46	0.036	0.0008
FS4	Burner.Fl_O	48.43	128.877	2485.98	152.56	0.0197	12.09	121.727	2453.40	74.6	0.2986	1.29720	0.0007638	47.46	0.036	0.0245
FS45	HPT.Fl_O	64.59	29.924	1624.40	-4.95	0.0147	56.13	26.921	1581.89	265.4	0.4006	1.33343	0.0007638	63.60	0.049	0.0186
FS49	LPT.Fl_O	65.34	6.869	1156.01	-126.74	0.0145	208.70	5.919	1111.17	860.2	0.4718	1.36079	0.0007638	64.36	0.049	0.0184
FS5	TEGV.Fl_O	65.34	6.869	1156.07	-126.74	0.0145	208.71	5.919	1111.23	860.2	0.4718	1.36078	0.0007638	64.36	0.049	0.0184
FS8	Core_Nozz.Fl_O	65.34	6.869	1156.21	-126.74	0.0145	208.72	3.659	976.47	613.4	1.0000	1.36077	0.0007638	64.36	0.049	0.0184
FS17	FanDuctLkg.Fl_O	366.49	7.887	527.56	-4.22	0.0000	688.70	6.547	500.21	2606.7	0.5226	1.40011	0.0000308	366.48	0.011	0.0000
FS171	Bleed15.Fl_O	366.49	7.887	527.56	-4.22	0.0000	688.70	6.362	496.13	2481.9	0.5625	1.40011	0.0000308	366.48	0.011	0.0000
FS172	FanDuct.Fl_O	366.49	7.887	527.56	-4.22	0.0000	688.70	6.362	496.13	2481.9	0.5625	1.40011	0.0000308	366.48	0.011	0.0000
FS173	Byp_Nozz.Fl_O	366.49	7.887	527.56	-4.22	0.0000	688.70	4.165	439.51	2006.9	1.0000	1.40011	0.0000308	366.48	0.011	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	983.83	1.526	0.9074	3779.983	1.1417	0.9127	-8138.6	73.89	30.77
LPC	172.77	2.359	0.8701	3779.983	1.3194	0.8847	-3225.3	4.57	3.57
HPC	84.24	10.821	0.8615	9988.985	2.0897	0.8980	-14662.7	34.99	33.57
HPT	12.09	4.307	0.9067	217.374	1.3589	0.8875	14662.7		
LPT	56.13	4.357	0.9100	88.525	1.4026	0.8924	11363.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1143.11	1.514	0.9092	3743.941	0.0578	0.8607	1.0235	0.9980	0.9905
LPC	139.08	2.366	0.8195	0.998	0.0000	1.2422	0.9946	1.0618	0.0003
HPC	76.62	10.358	0.8704	9722.686	12.7138	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.215	0.9067	1.306	4.2152	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.525	0.9168	0.996	3.5246	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3526.65	10395.8

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4718	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6945	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10838.2	7105.4	14662.7
LP_Shaft	3567.9	16728.2	11363.9

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3702	949.14	93.96	29.924
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7536	949.14	93.96	6.869
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	915.75	85.72	38.530
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1120.73	136.84	86.420
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	915.75	85.72	38.530
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1275.96	176.42	131.915
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	915.75	85.72	38.530

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	610.61	11.51	12.191
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.3539	1275.96	176.42	128.877
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.4349	1275.96	176.42	72.276
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1275.96	176.42	131.915
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1275.96	176.42	131.915
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1275.96	176.42	131.915
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	527.56	-4.22	7.887
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	527.56	-4.22	7.887
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	527.56	-4.22	7.887
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	527.56	-4.22	7.887

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2485.96	0.9995	0.0230	0.93293	0.01966

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.986	0.9808	1.0000	0.9800	613.40	1.000	1486.6	3142.6
Byp_Nozz	2.281	0.9815	1.0000	0.9800	2006.86	1.000	1007.5	12895.9

10μm, ISA +36R

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**********************************************************************************************************************************
Date:05/13/13    Time:07:21:31    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 26/ 40/ 1/24    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 468.91    Stator 1 exit: 488.41    Stator 2 inlet: 511.07    Stator 2 exit: 518.82
            Stator 3 inlet: 548.81    Stator 3 exit: 557.31    Stator 4 inlet: 585.38    Stator 4 exit: 593.55
            Stator 5 inlet: 615.30    Stator 5 exit: 623.25            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.34
Fan Bypass Relative Humidity       0.21
LPC Inlet Relative Humidity        2.53
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          793.07    Fan/LPC Inlet Flow Velocity        492.99
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.45
Ambient Static Temperature     429.85    Fan/LPC Inlet Static Temperature   462.02
Additional Water at LPC Exit   0.0008426

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.780   35000.0    36.00    465.46     8117.3    0.6152    4994.10    5.3011    793.07    31.924     1.687      100.000      2926.1   2747.5   1915.9


                                        FLOW STATION DATA
                                  W        Pt        Tt        ht     FAR        Wc        Ps        Ts      Aphy      MN      gamt        WAR      Wair    WH2O  H2O frac
FS0   Ambient.Fl_O         465.46     5.170    482.28    -15.41  0.0000   1275.86     3.458    429.85    3892.4  0.7800   1.40064  0.0000871    465.42   0.041    0.0001
FS1   Inlet.Fl_O           465.46     5.170    482.28    -15.41  0.0000   1275.86     3.839    442.90    4168.2  0.6661   1.40064  0.0000871    465.42   0.041    0.0001
FS12  Splitter.Fl_02       391.59     5.167    482.28    -15.41  0.0000   1073.92     3.865    443.81    3531.8  0.6576   1.40064  0.0000871    391.55   0.034    0.0001
FS2   Splitter.Fl_01        73.87     5.167    482.28    -15.41  0.0000    202.58     4.448    462.02     830.5  0.4677   1.40064  0.0000871     73.86   0.006    0.0001
FS14  Fan.Fl_O              391.59     8.747    568.21      5.21  0.0000    688.62     7.261    538.79    2606.7  0.5227   1.39944  0.0000871    391.55   0.034    0.0001
FS23  LPC.Fl_O               73.87    12.732    653.08     25.63  0.0000     95.68    11.161    629.06     412.6  0.4381   1.39741  0.0000871     73.86   0.006    0.0001
FS24  VaporIN.Fl_O           73.93    12.732    654.09     21.04  0.0000     95.83    11.154    629.93     412.6  0.4392   1.39726  0.0009297     73.86   0.069    0.0009
FS25  Bleed2.Fl_O            73.93    12.732    654.09     21.04  0.0000     95.83    11.154    629.93     412.6  0.4392   1.39726  0.0009297     73.86   0.069    0.0009
FS3   HPC.Fl_O               70.35   165.042   1434.36    216.67  0.0000     10.42   148.825   1396.01      49.7  0.3932   1.35386  0.0009297     70.28   0.065    0.0009
FS36  Bleed3.Fl_O            54.52   165.042   1434.36    216.67  0.0000      8.07   155.622   1412.46      49.3  0.2957   1.35386  0.0009297     54.47   0.051    0.0009
FS4   Burner.Fl_O            55.90   161.241   2926.10    184.53  0.0255     12.10   152.342   2889.33      74.6  0.3008   1.28075  0.0009297     54.47   0.051    0.0315
FS45  HPT.Fl_O               74.45    37.751   1925.14     -0.59  0.0190     55.84    34.008   1877.19     265.4  0.4008   1.31704  0.0009297     73.00   0.068    0.0239
FS49  LPT.Fl_O               75.32     8.697   1383.15   -146.66  0.0188    207.83     7.504   1331.76     860.2  0.4725   1.34383  0.0009297     73.86   0.069    0.0236
FS5   TEGV.Fl_O              75.32     8.697   1383.21   -146.66  0.0188    207.83     7.504   1331.82     860.2  0.4725   1.34382  0.0009297     73.86   0.069    0.0236
FS8   Core_Nozz.Fl_O         75.32     8.697   1383.34   -146.66  0.0188    207.84     4.657   1176.42     613.4  1.0000   1.34381  0.0009297     73.86   0.069    0.0236
FS17  FanDuctLkg.Fl_O        391.59     8.747    568.21      5.21  0.0000    688.62     7.261    538.79    2606.7  0.5227   1.39944  0.0000871    391.55   0.034    0.0001
FS171 Bleed15.Fl_O           391.59     8.747    568.21      5.21  0.0000    688.62     7.056    534.40    2481.9  0.5626   1.39944  0.0000871    391.55   0.034    0.0001
FS172 FanDuct.Fl_O           391.59     8.747    568.21      5.21  0.0000    688.62     7.056    534.40    2481.9  0.5626   1.39944  0.0000871    391.55   0.034    0.0001
FS173 Byp_Nozz.Fl_O          391.59     8.747    568.21      5.21  0.0000    688.62     4.620    473.45    2006.9  1.0000   1.39944  0.0000871    391.55   0.034    0.0001

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR      eff        Nc       TR   efPoly       pwr      SMN      SMW
Fan      1073.92   1.693   0.9109  4120.978   1.1782   0.9173  -11423.5    38.36    23.45
LPC       202.58   2.464   0.8288  4120.978   1.3542   0.8489   -4289.1     2.96     2.22
HPC        95.83  12.963   0.8587 10326.703   2.1929   0.8978  -19967.3    26.63    25.82
HPT        12.10   4.271   0.9122   214.382   1.3424   0.8901   19967.3
LPT        55.84   4.341   0.9168    90.567   1.3884   0.9006   15712.3

TURBOMACHINERY MAP DATA
           WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan      1247.78   1.677   0.9128   4081.685    0.0636      0.8607    1.0235    0.9980    0.9905
LPC       165.14   2.728   0.8329      1.088    0.0000      1.2268    0.8474    0.9950    0.0003
HPC        87.16  12.399   0.8676  10051.400   13.4384      1.0995    1.0494    0.9898    0.9733
HPT         0.96   4.181   0.9122      1.288    4.1805     12.6299    0.9723    1.0000    0.0003
LPT         0.86   3.513   0.9236      1.019    3.5126     65.2590    0.7521    0.9926    0.0005
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===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3892.43	11473.2
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4725	860.21
FanDuct	0.0000	0.5626	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.3011	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11596.7	9043.2	19967.3
LP_Shaft	3973.8	20766.9	15712.3

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.7207	1052.92	118.85	37.751
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.8650	1052.92	118.85	8.697
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1013.77	109.07	46.240
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1253.52	169.72	107.164
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1013.77	109.07	46.240
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1434.36	216.67	165.042
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1013.77	109.07	46.240

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	654.09	21.04	12.732
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	8.4414	1434.36	216.67	161.241
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	7.3864	1434.36	216.67	90.605
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1434.36	216.67	165.042
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1434.36	216.67	165.042
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1434.36	216.67	165.042
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	568.21	5.21	8.747
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	568.21	5.21	8.747
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	568.21	5.21	8.747
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	568.21	5.21	8.747

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2926.10	0.9995	0.0230	1.38725	0.02547

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.515	0.9810	1.0000	0.9800	613.40	1.000	1622.4	4533.4
Byp_Nozz	2.529	0.9811	1.0000	0.9800	2006.86	1.000	1045.6	15057.1

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**********************************************************************************************************************************
Date:05/13/13    Time:07:22:04    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 19/ 33/ 1/17    Run by: Philip C Jorgenson      PC:    75
Temperature Stator 1 inlet: 478.88    Stator 1 exit: 495.86    Stator 2 inlet: 516.51    Stator 2 exit: 525.19
            Stator 3 inlet: 549.81    Stator 3 exit: 558.46    Stator 4 inlet: 581.72    Stator 4 exit: 589.63
            Stator 5 inlet: 608.21    Stator 5 exit: 615.66            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.82
Fan Bypass Relative Humidity       0.30
LPC Inlet Relative Humidity        2.06
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          793.07    Fan/LPC Inlet Flow Velocity        422.59
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.63
Ambient Static Temperature     429.85    Fan/LPC Inlet Static Temperature   467.40
Additional Water at LPC Exit   0.0009991

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W          Fn       TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.780   35000.0    36.00    429.85      6098.2     0.6086    3711.55    5.5955    793.07    26.691     1.344       75.600      2642.5   2485.1   1724.8


                                        FLOW STATION DATA
                                  W         Pt         Tt         ht      FAR        Wc         Ps         Ts      Aphy      MN      gamt         WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O          429.85      5.170     482.28    -15.41   0.0000   1178.26      3.458     429.85    3594.7  0.7800   1.40064   0.0000871   429.81    0.037    0.0001
FS1   Inlet.Fl_O            429.85      5.170     482.28    -15.41   0.0000   1178.26      4.118     451.90    4168.2  0.5791   1.40064   0.0000871   429.81    0.037    0.0001
FS12  Splitter.Fl_02        364.68      5.167     482.28    -15.41   0.0000   1000.11      4.111     451.74    3531.8  0.5808   1.40064   0.0000871   364.64    0.032    0.0001
FS2   Splitter.Fl_01         65.17      5.167     482.28    -15.41   0.0000    178.73      4.631     467.40     830.5  0.3986   1.40064   0.0000871    65.17    0.006    0.0001
FS14  Fan.Fl_O              364.68      8.043     553.95      1.78   0.0000    688.65      6.676     525.26    2606.7  0.5226   1.39969   0.0000871   364.64    0.032    0.0001
FS23  LPC.Fl_O               65.17     12.353     639.47     22.35   0.0000     86.09     11.158     621.22     412.6  0.3842   1.39780   0.0000871    65.17    0.006    0.0001
FS24  VaporIN.Fl_O           65.24     12.353     640.68     16.91   0.0000     86.26     11.152     622.30     412.6  0.3853   1.39762   0.0010862    65.17    0.071    0.0011
FS25  Bleed2.Fl_O            65.24     12.353     640.68     16.91   0.0000     86.26     11.152     622.30     412.6  0.3853   1.39762   0.0010862    65.17    0.071    0.0011
FS3   HPC.Fl_O               62.07    137.988    1346.69    192.91   0.0000     10.65    123.721    1308.35      49.7  0.4033   1.35889   0.0010862    62.01    0.067    0.0011
FS36  Bleed3.Fl_O            48.11    137.988    1346.69    192.91   0.0000      8.26    129.724    1324.88      49.3  0.3026   1.35889   0.0010862    48.05    0.052    0.0011
FS4   Burner.Fl_O            49.14    134.810    2642.46    166.48   0.0215     12.09    127.343    2608.38      74.6  0.2993   1.29130   0.0010862    48.05    0.052    0.0269
FS45  HPT.Fl_O               65.51     31.389    1732.68     -1.18   0.0160     56.06     28.246    1688.06     265.4  0.4010   1.32729   0.0010862    64.40    0.070    0.0205
FS49  LPT.Fl_O               66.27      7.218    1237.33   -131.71   0.0158    208.38      6.223    1190.06     860.2  0.4721   1.35470   0.0010862    65.17    0.071    0.0203
FS5   TEGV.Fl_O              66.27      7.218    1237.40   -131.71   0.0158    208.39      6.223    1190.12     860.2  0.4721   1.35469   0.0010862    65.17    0.071    0.0203
FS8   Core_Nozz.Fl_O         66.27      7.218    1237.53   -131.71   0.0158    208.40      3.852    1047.70     613.4  1.0000   1.35468   0.0010862    65.17    0.071    0.0203
FS17  FanDuctLkg.Fl_O       364.68      8.043     553.95      1.78   0.0000    688.65      6.676     525.26    2606.7  0.5226   1.39969   0.0000871   364.64    0.032    0.0001
FS171 Bleed15.Fl_O           364.68      8.043     553.95      1.78   0.0000    688.65      6.488     520.97    2481.9  0.5626   1.39969   0.0000871   364.64    0.032    0.0001
FS172 FanDuct.Fl_O           364.68      8.043     553.95      1.78   0.0000    688.65      6.488     520.97    2481.9  0.5626   1.39969   0.0000871   364.64    0.032    0.0001
FS173 Byp_Nozz.Fl_O          364.68      8.043     553.95      1.78   0.0000    688.65      4.248     461.54    2006.9  1.0000   1.39969   0.0000871   364.64    0.032    0.0001

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff         Nc        TR    efPoly        pwr       SMN       SMW
Fan      1000.11   1.556    0.9070   3843.155    1.1486    0.9126    -8871.2     62.35     29.33
LPC       178.73   2.391    0.8667   3843.155    1.3259    0.8819    -3481.8      4.00      3.16
HPC        86.26  11.170    0.8615  10045.180    2.1020    0.8982   -15851.7     33.59     32.28
HPT        12.09   4.295    0.9089    217.184    1.3532    0.8892    15851.8
LPT        56.06   4.348    0.9130     89.029    1.3976    0.8960    12352.9

TURBOMACHINERY MAP DATA
           WcMap    PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan      1162.03    1.544   0.9088   3806.511    0.0589      0.8607    1.0235    0.9980    0.9905
LPC       143.15    2.431   0.8208      1.015    0.0000      1.2485    0.9719    1.0559    0.0003
HPC        78.45   10.691   0.8704   9777.382   12.8276      1.0995    1.0494    0.9898    0.9733
HPT         0.96    4.204   0.9089      1.305    4.2036     12.6299    0.9723    1.0000    0.0003
LPT         0.86    3.518   0.9197      1.001    3.5184     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3594.66	10595.5

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4721	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5955	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11164.3	7457.3	15851.8
LP_Shaft	3705.9	17507.1	12352.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.4008	1000.61	104.91	31.389
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.7633	1000.61	104.91	7.218
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	965.18	96.11	39.993
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1182.44	150.67	90.246
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	965.18	96.11	39.993
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1346.69	192.91	137.988
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	965.18	96.11	39.993

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	640.68	16.91	12.353
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	7.4489	1346.69	192.91	134.810
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	6.5179	1346.69	192.91	75.653
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1346.69	192.91	137.988
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1346.69	192.91	137.988
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1346.69	192.91	137.988
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	553.95	1.78	8.043
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	553.95	1.78	8.043
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	553.95	1.78	8.043
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	553.95	1.78	8.043

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2642.44	0.9995	0.0230	1.03099	0.02145

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.087	0.9813	1.0000	0.9800	613.40	1.000	1536.9	3407.6
Byp_Nozz	2.326	0.9815	1.0000	0.9800	2006.86	1.000	1032.4	13286.2

```
**********************************************************************************************************************************
Date:05/13/13    Time:07:22:36    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    72
Temperature Stator 1 inlet: 479.85    Stator 1 exit: 496.57    Stator 2 inlet: 517.01    Stator 2 exit: 525.73
            Stator 3 inlet: 549.86    Stator 3 exit: 558.50    Stator 4 inlet: 581.29    Stator 4 exit: 589.17
            Stator 5 inlet: 607.42    Stator 5 exit: 614.82            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.71
Fan Bypass Relative Humidity       0.31
LPC Inlet Relative Humidity        2.01
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          793.07    Fan/LPC Inlet Flow Velocity        414.01
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.65
Ambient Static Temperature     429.85    Fan/LPC Inlet Static Temperature   467.99
Additional Water at LPC Exit   0.0010212

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel      BPR      VTAS      OPR       EPR       PowerSet      T4      T41      T49
 0.780   35000.0    36.00    425.71     5870.2    0.6091    3575.25    5.6461    793.07   26.071     1.306       72.700      2611.2   2456.2   1704.1


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht      FAR        Wc        Ps        Ts      Aphy      MN      gamt        WAR      Wair    WH2O  H2O frac
FS0   Ambient.Fl_O          425.71     5.170    482.28    -15.41   0.0000   1166.93     3.458    429.85    3560.1  0.7800   1.40064   0.0000871   425.68   0.037    0.0001
FS1   Inlet.Fl_O            425.71     5.170    482.28    -15.41   0.0000   1166.93     4.146    452.77    4168.2  0.5703   1.40064   0.0000871   425.68   0.037    0.0001
FS12  Splitter.Fl_02        361.66     5.167    482.28    -15.41   0.0000    991.84     4.135    452.49    3531.8  0.5731   1.40064   0.0000871   361.63   0.031    0.0001
FS2   Splitter.Fl_01         64.05     5.167    482.28    -15.41   0.0000    175.67     4.652    467.99     830.5  0.3903   1.40064   0.0000871    64.05   0.006    0.0001
FS14  Fan.Fl_O              361.66     7.964    552.25      1.38   0.0000    688.66     6.611    523.65    2606.7  0.5226   1.39972   0.0000871   361.63   0.031    0.0001
FS23  LPC.Fl_O               64.05    12.286    638.01     22.00   0.0000     84.98    11.132    620.35     412.6  0.3782   1.39784   0.0000871    64.05   0.006    0.0001
FS24  VaporIN.Fl_O           64.12    12.286    639.25     16.43   0.0000     85.15    11.126    621.46     412.6  0.3793   1.39766   0.0011083    64.05   0.071    0.0011
FS25  Bleed2.Fl_O            64.12    12.286    639.25     16.43   0.0000     85.15    11.126    621.46     412.6  0.3793   1.39766   0.0011083    64.05   0.071    0.0011
FS3   HPC.Fl_O               61.01   134.780   1336.94    190.25   0.0000     10.68   120.762   1298.59      49.7  0.4045   1.35946   0.0011083    60.94   0.068    0.0011
FS36  Bleed3.Fl_O            47.28   134.780   1336.94    190.25   0.0000      8.28   126.663   1315.13      49.3  0.3034   1.35946   0.0011083    47.23   0.052    0.0011
FS4   Burner.Fl_O            48.28   131.676   2611.22    164.41   0.0210     12.09   124.383   2577.43      74.6  0.2991   1.29249   0.0011083    47.23   0.052    0.0264
FS45  HPT.Fl_O               64.36    30.641   1711.79     -1.28   0.0157     56.08    27.570   1667.55     265.4  0.4010   1.32848   0.0011083    63.30   0.070    0.0201
FS49  LPT.Fl_O               65.11     7.045   1221.69   -130.11   0.0155    208.45     6.074   1174.86     860.2  0.4720   1.35589   0.0011083    64.05   0.071    0.0199
FS5   TEGV.Fl_O              65.11     7.045   1221.75   -130.11   0.0155    208.45     6.074   1174.93     860.2  0.4720   1.35588   0.0011083    64.05   0.071    0.0199
FS8   Core_Nozz.Fl_O         65.11     7.045   1221.89   -130.11   0.0155    208.46     3.759   1033.95     613.4  1.0000   1.35587   0.0011083    64.05   0.071    0.0199
FS17  FanDuctLkg.Fl_O        361.66     7.964    552.25      1.38   0.0000    688.66     6.611    523.65    2606.7  0.5226   1.39972   0.0000871   361.63   0.031    0.0001
FS171 Bleed15.Fl_O           361.66     7.964    552.25      1.38   0.0000    688.66     6.424    519.38    2481.9  0.5626   1.39972   0.0000871   361.63   0.031    0.0001
FS172 FanDuct.Fl_O           361.66     7.964    552.25      1.38   0.0000    688.66     6.424    519.38    2481.9  0.5626   1.39972   0.0000871   361.63   0.031    0.0001
FS173 Byp_Nozz.Fl_O          361.66     7.964    552.25      1.38   0.0000    688.66     4.206    460.12    2006.9  1.0000   1.39972   0.0000871   361.63   0.031    0.0001

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR      eff        Nc       TR   efPoly       pwr      SMN      SMW
Fan       991.84   1.541   0.9070  3812.224   1.1451   0.9125   -8589.4    67.31    30.05
LPC       175.67   2.378   0.8687  3812.224   1.3229   0.8836   -3390.2     4.28     3.37
HPC        85.15  10.970   0.8615 10013.931   2.0914   0.8980  -15386.6    34.44    33.07
HPT        12.09   4.297   0.9083   217.556   1.3543   0.8888   15386.6
LPT        56.08   4.349   0.9124    88.850   1.3985   0.8954   11979.6

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan       1152.42   1.529   0.9089  3775.875    0.0583      0.8607    1.0235    0.9980    0.9905
LPC        141.16   2.399   0.8202     1.007    0.0000      1.2444    0.9848    1.0592    0.0003
HPC         77.44  10.500   0.8704  9746.966   12.7574      1.0995    1.0494    0.9898    0.9733
HPT          0.96   4.206   0.9083     1.307    4.2060     12.6299    0.9723    1.0000    0.0003
LPT          0.86   3.519   0.9192     0.999    3.5189     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3560.09	10493.6

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6461	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11117.1	7269.2	15386.6
LP_Shaft	3676.0	17115.7	11979.6

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3596	994.82	103.34	30.641
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7502	994.82	103.34	7.045
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	959.81	94.65	39.235
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1174.54	148.54	88.232
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	959.81	94.65	39.235
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1336.94	190.25	134.780
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	959.81	94.65	39.235

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	639.25	16.43	12.286
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.3212	1336.94	190.25	131.676
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.4062	1336.94	190.25	73.884
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1336.94	190.25	134.780
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1336.94	190.25	134.780
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1336.94	190.25	134.780
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	552.25	1.38	7.964
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	552.25	1.38	7.964
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	552.25	1.38	7.964
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	552.25	1.38	7.964

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2611.20	0.9995	0.0230	0.99313	0.02103

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.037	0.9811	1.0000	0.9800	613.40	1.000	1527.4	3275.7
Byp_Nozz	2.303	0.9815	1.0000	0.9800	2006.86	1.000	1030.8	13088.1

```
**********************************************************************************************************************************
Date:05/13/13    Time:07:23:25    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 37/ 51/ 1/35    Run by: Philip C Jorgenson      PC:    69
Temperature Stator 1 inlet: 480.73    Stator 1 exit: 497.19    Stator 2 inlet: 517.39    Stator 2 exit: 526.11
            Stator 3 inlet: 549.75    Stator 3 exit: 558.36    Stator 4 inlet: 580.69    Stator 4 exit: 588.52
            Stator 5 inlet: 606.44    Stator 5 exit: 613.76            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.60
Fan Bypass Relative Humidity       0.33
LPC Inlet Relative Humidity        1.97
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                 0.0000100    Inlet Length                        40.00
Ambient Flow Velocity           793.07    Fan/LPC Inlet Flow Velocity        405.57
Ambient Static Pressure           3.46    Fan/LPC Inlet Static Pressure        4.67
Ambient Static Temperature      429.85    Fan/LPC Inlet Static Temperature   468.57
Additional Water at LPC Exit    0.0010436

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS      OPR       EPR       PowerSet      T4      T41      T49
 0.780   35000.0    36.00    421.73     5651.4    0.6097    3445.70    5.7004    793.07   25.464     1.269       69.900      2581.3   2428.6   1684.2


                                        FLOW STATION DATA
                                  W        Pt        Tt        ht     FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair    WH2O  H2O frac
FS0   Ambient.Fl_O          421.73     5.170    482.28    -15.41  0.0000   1156.01     3.458    429.85    3526.8  0.7800   1.40064   0.0000871    421.70   0.037    0.0001
FS1   Inlet.Fl_O            421.73     5.170    482.28    -15.41  0.0000   1156.01     4.172    453.57    4168.2  0.5620   1.40064   0.0000871    421.70   0.037    0.0001
FS12  Splitter.Fl_02        358.79     5.167    482.28    -15.41  0.0000    983.98     4.157    453.18    3531.8  0.5660   1.40064   0.0000871    358.76   0.031    0.0001
FS2   Splitter.Fl_01         62.94     5.167    482.28    -15.41  0.0000    172.61     4.672    468.57     830.5  0.3821   1.40064   0.0000871     62.94   0.005    0.0001
FS14  Fan.Fl_O              358.79     7.889    550.60      0.98  0.0000    688.66     6.549    522.08    2606.7  0.5226   1.39975   0.0000871    358.76   0.031    0.0001
FS23  LPC.Fl_O               62.94    12.204    636.38     21.61  0.0000     83.96    11.089    619.25     412.6  0.3728   1.39789   0.0000871     62.94   0.005    0.0001
FS24  VaporIN.Fl_O           63.01    12.204    637.64     15.92  0.0000     84.13    11.083    620.39     412.6  0.3738   1.39770   0.0011307     62.94   0.071    0.0011
FS25  Bleed2.Fl_O            63.01    12.204    637.64     15.92  0.0000     84.13    11.083    620.39     412.6  0.3738   1.39770   0.0011307     62.94   0.071    0.0011
FS3   HPC.Fl_O               59.95   131.643   1327.40    187.65  0.0000     10.71   117.877   1289.06      49.7  0.4057   1.36003   0.0011307     59.88   0.068    0.0011
FS36  Bleed3.Fl_O            46.46   131.643   1327.40    187.65  0.0000      8.30   123.674   1305.60      49.3  0.3041   1.36003   0.0011307     46.41   0.052    0.0011
FS4   Burner.Fl_O            47.42   128.611   2581.28    162.37  0.0206     12.09   121.486   2547.79      74.6  0.2990   1.29363   0.0011307     46.41   0.052    0.0260
FS45  HPT.Fl_O               63.23    29.909   1691.79     -1.45  0.0154     56.11    26.908   1647.90     265.4  0.4011   1.32962   0.0011307     62.20   0.070    0.0198
FS49  LPT.Fl_O               63.96     6.877   1206.84   -128.62  0.0152    208.50     5.928   1160.45     860.2  0.4720   1.35702   0.0011307     62.94   0.071    0.0196
FS5   TEGV.Fl_O              63.96     6.877   1206.90   -128.62  0.0152    208.51     5.928   1160.51     860.2  0.4720   1.35701   0.0011307     62.94   0.071    0.0196
FS8   Core_Nozz.Fl_O         63.96     6.877   1207.04   -128.62  0.0152    208.52     3.668   1020.92     613.4  1.0000   1.35700   0.0011307     62.94   0.071    0.0196
FS17  FanDuctLkg.Fl_O        358.79     7.889    550.60      0.98  0.0000    688.66     6.549    522.08    2606.7  0.5226   1.39975   0.0000871    358.76   0.031    0.0001
FS171 Bleed15.Fl_O           358.79     7.889    550.60      0.98  0.0000    688.66     6.364    517.83    2481.9  0.5626   1.39975   0.0000871    358.76   0.031    0.0001
FS172 FanDuct.Fl_O           358.79     7.889    550.60      0.98  0.0000    688.66     6.364    517.83    2481.9  0.5626   1.39975   0.0000871    358.76   0.031    0.0001
FS173 Byp_Nozz.Fl_O          358.79     7.889    550.60      0.98  0.0000    688.66     4.166    458.74    2006.9  1.0000   1.39975   0.0000871    358.76   0.031    0.0001

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR      eff        Nc       TR   efPoly       pwr       SMN      SMW
Fan       983.98   1.527   0.9073  3780.705   1.1417   0.9127   -8320.5     73.73    30.75
LPC       172.61   2.362   0.8702  3780.705   1.3195   0.8848   -3296.2      4.57     3.57
HPC        84.13  10.787   0.8615  9985.183   2.0817   0.8978  -14938.2     35.25    33.82
HPT        12.09   4.300   0.9078   217.912   1.3554   0.8883   14938.2
LPT        56.11   4.349   0.9117    88.634   1.3992   0.8945   11616.7

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan       1143.28   1.515   0.9092   3744.657    0.0578      0.8607    1.0235    0.9980    0.9905
LPC        139.13   2.367   0.8195      0.999    0.0000      1.2407    0.9961    1.0619    0.0003
HPC         76.51  10.326   0.8704   9718.985   12.6923      1.0995    1.0494    0.9898    0.9733
HPT          0.96   4.209   0.9078      1.310    4.2087     12.6299    0.9723    1.0000    0.0003
LPT          0.86   3.519   0.9185      0.997    3.5189     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3526.80	10395.5

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.7004	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11071.3	7086.5	14938.2
LP_Shaft	3645.6	16735.7	11616.7

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3187	989.07	101.79	29.909
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7372	989.07	101.79	6.877
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	954.46	93.20	38.480
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1166.77	146.44	86.256
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	954.46	93.20	38.480
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1327.40	187.65	131.643
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	954.46	93.20	38.480

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	637.64	15.92	12.204
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.1941	1327.40	187.65	128.611
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.2950	1327.40	187.65	72.153
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1327.40	187.65	131.643
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1327.40	187.65	131.643
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1327.40	187.65	131.643
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	550.60	0.98	7.889
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	550.60	0.98	7.889
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	550.60	0.98	7.889
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	550.60	0.98	7.889

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2581.26	0.9995	0.0230	0.95714	0.02062

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.989	0.9808	1.0000	0.9800	613.40	1.000	1518.4	3147.3
Byp_Nozz	2.281	0.9815	1.0000	0.9800	2006.86	1.000	1029.3	12899.6

25μm, ISA +18R

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*****************************************************************************************************************************
Date:05/13/13    Time:09:31:08    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 27/ 55/ 2/24    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 449.02    Stator 1 exit: 467.66    Stator 2 inlet: 489.26    Stator 2 exit: 496.56
            Stator 3 inlet: 525.33    Stator 3 exit: 533.38    Stator 4 inlet: 560.35    Stator 4 exit: 568.11
            Stator 5 inlet: 588.99    Stator 5 exit: 596.56            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.11
Fan Bypass Relative Humidity       0.16
LPC Inlet Relative Humidity        2.31
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          776.30    Fan/LPC Inlet Flow Velocity        483.40
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.45
Ambient Static Temperature     411.85    Fan/LPC Inlet Static Temperature    442.62
Additional Water at LPC Exit   0.0000769
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	475.58	8100.7	0.5999	4859.43	5.2932	776.30	31.986	1.684	100.000	2818.7	2645.7	1838.6

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	475.58	5.170	462.10	-19.92	0.0000	1276.02	3.458	411.85	3892.8	0.7800	1.40081	0.0000308	475.57	0.015	0.0000
FS1	Inlet.Fl_O	475.58	5.170	462.10	-19.92	0.0000	1276.02	3.838	424.34	4168.2	0.6662	1.40081	0.0000308	475.57	0.015	0.0000
FS12	Splitter.Fl_02	400.01	5.167	462.10	-19.92	0.0000	1073.80	3.865	425.25	3531.8	0.6574	1.40081	0.0000308	400.00	0.012	0.0000
FS2	Splitter.Fl_01	75.57	5.167	462.10	-19.92	0.0000	202.86	4.445	442.62	830.5	0.4685	1.40081	0.0000308	75.57	0.002	0.0000
FS14	Fan.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	7.260	516.24	2606.7	0.5226	1.39985	0.0000308	400.00	0.012	0.0000
FS23	LPC.Fl_O	75.57	12.670	625.31	19.26	0.0000	96.24	11.085	601.95	412.6	0.4413	1.39819	0.0000308	75.57	0.002	0.0000
FS24	VaporIN.Fl_O	75.58	12.670	625.46	18.86	0.0000	96.26	11.084	602.07	412.6	0.4415	1.39817	0.0001078	75.57	0.008	0.0001
FS25	Bleed2.Fl_O	75.58	12.670	625.46	18.86	0.0000	96.26	11.084	602.07	412.6	0.4415	1.39817	0.0001078	75.57	0.008	0.0001
FS3	HPC.Fl_O	71.91	165.364	1379.21	206.83	0.0000	10.42	149.114	1342.09	49.7	0.3928	1.35714	0.0001078	71.90	0.008	0.0001
FS36	Bleed3.Fl_O	55.73	165.364	1379.21	206.83	0.0000	8.08	155.924	1358.01	49.3	0.2953	1.35714	0.0001078	55.73	0.006	0.0001
FS4	Burner.Fl_O	57.08	161.555	2818.68	176.55	0.0242	12.10	152.619	2782.89	74.6	0.3003	1.28468	0.0001078	55.73	0.006	0.0292
FS45	HPT.Fl_O	76.04	37.753	1847.47	-1.63	0.0181	55.87	34.007	1801.01	265.4	0.4002	1.32099	0.0001078	74.68	0.008	0.0220
FS49	LPT.Fl_O	76.93	8.678	1323.60	-141.49	0.0179	208.11	7.485	1273.86	860.2	0.4724	1.34811	0.0001078	75.57	0.008	0.0218
FS5	TEGV.Fl_O	76.93	8.678	1323.66	-141.49	0.0179	208.11	7.485	1273.93	860.2	0.4724	1.34810	0.0001078	75.57	0.008	0.0218
FS8	Core_Nozz.Fl_O	76.93	8.678	1323.79	-141.49	0.0179	208.12	4.641	1123.76	613.4	1.0000	1.34809	0.0001078	75.57	0.008	0.0218
FS17	FanDuctLkg.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	7.260	516.24	2606.7	0.5226	1.39985	0.0000308	400.00	0.012	0.0000
FS171	Bleed15.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	7.055	512.03	2481.9	0.5625	1.39985	0.0000308	400.00	0.012	0.0000
FS172	FanDuct.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	7.055	512.03	2481.9	0.5625	1.39985	0.0000308	400.00	0.012	0.0000
FS173	Byp_Nozz.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	4.619	453.60	2006.9	1.0000	1.39985	0.0000308	400.00	0.012	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1073.80	1.692	0.9109	4120.456	1.1782	0.9173	-11176.8	38.42	23.46
LPC	202.86	2.452	0.8266	4120.456	1.3532	0.8469	-4189.6	2.96	2.22
HPC	96.26	13.052	0.8586	10344.363	2.2051	0.8979	-19612.3	26.29	25.49
HPT	12.10	4.279	0.9118	213.961	1.3469	0.8911	19612.3		
LPT	55.87	4.350	0.9155	90.485	1.3923	0.8986	15366.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1247.65	1.677	0.9128	4081.168	0.0636	0.8607	1.0235	0.9980	0.9905
LPC	165.09	2.727	0.8329	1.088	0.0000	1.2288	0.8407	0.9925	0.0003
HPC	87.55	12.484	0.8674	10068.589	13.4710	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.188	0.9118	1.286	4.1884	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.520	0.9223	1.018	3.5199	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3892.75	11475.0

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4724	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2932	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11359.4	9067.9	19612.3
LP_Shaft	3889.2	20751.0	15366.4

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.7812	1010.23	112.84	37.753
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.8842	1010.23	112.84	8.678
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	972.39	103.44	46.263
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1204.21	161.71	107.340
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	972.39	103.44	46.263
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1379.21	206.83	165.364
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	972.39	103.44	46.263

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	625.46	18.86	12.670
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	8.6294	1379.21	206.83	161.555
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	7.5509	1379.21	206.83	90.740
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1379.21	206.83	165.364
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1379.21	206.83	165.364
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1379.21	206.83	165.364
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	544.45	-0.17	8.745
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	544.45	-0.17	8.745
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	544.45	-0.17	8.745
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	544.45	-0.17	8.745

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2818.67	0.9995	0.0230	1.34984	0.02422

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.509	0.9810	1.0000	0.9800	613.40	1.000	1587.7	4521.4
Byp_Nozz	2.529	0.9811	1.0000	0.9800	2006.86	1.000	1023.5	15054.2

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Date:05/13/13 Time:09:31:58 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 21/ 49/ 2/18 Run by: Philip C Jorgenson PC: 75
Temperature Stator 1 inlet: 458.64 Stator 1 exit: 474.89 Stator 2 inlet: 494.62 Stator 2 exit: 502.88
Stator 3 inlet: 526.49 Stator 3 exit: 534.74 Stator 4 inlet: 557.07 Stator 4 exit: 564.63
Stator 5 inlet: 582.47 Stator 5 exit: 589.59 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.58		
Fan Bypass Relative Humidity	0.24		
LPC Inlet Relative Humidity	1.85		
LPC Exit Relative Humidity	0.02		
HPC Relative Humidity	0.00		
Drop Diameter	0.0000250	Inlet Length	40.00
Ambient Flow Velocity	776.30	Fan/LPC Inlet Flow Velocity	414.57
Ambient Static Pressure	3.46	Fan/LPC Inlet Static Pressure	4.63
Ambient Static Temperature	411.85	Fan/LPC Inlet Static Temperature	447.77
Additional Water at LPC Exit	0.0000967		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	439.16	6083.5	0.5942	3614.86	5.5833	776.30	26.748	1.342	75.600	2543.7	2391.6	1654.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	439.16	5.170	462.10	-19.92	0.0000	1178.31	3.458	411.85	3594.7	0.7800	1.40081	0.0000308	439.15	0.014	0.0000
FS1	Inlet.Fl_O	439.16	5.170	462.10	-19.92	0.0000	1178.31	4.118	432.98	4168.2	0.5791	1.40081	0.0000308	439.15	0.014	0.0000
FS12	Splitter.Fl_02	372.46	5.167	462.10	-19.92	0.0000	999.83	4.112	432.86	3531.8	0.5805	1.40081	0.0000308	372.44	0.011	0.0000
FS2	Splitter.Fl_01	66.71	5.167	462.10	-19.92	0.0000	179.07	4.629	447.77	830.5	0.3995	1.40081	0.0000308	66.71	0.002	0.0000
FS14	Fan.Fl_O	372.46	8.040	530.74	-3.46	0.0000	688.70	6.674	503.23	2606.7	0.5226	1.40006	0.0000308	372.44	0.011	0.0000
FS23	LPC.Fl_O	66.71	12.320	612.40	16.16	0.0000	86.46	11.117	594.73	412.6	0.3861	1.39851	0.0000308	66.71	0.002	0.0000
FS24	VaporIN.Fl_O	66.71	12.320	612.57	15.64	0.0000	86.48	11.117	594.88	412.6	0.3862	1.39849	0.0001276	66.71	0.009	0.0001
FS25	Bleed2.Fl_O	66.71	12.320	612.57	15.64	0.0000	86.48	11.117	594.88	412.6	0.3862	1.39849	0.0001276	66.71	0.009	0.0001
FS3	HPC.Fl_O	63.48	138.283	1293.52	184.50	0.0000	10.65	123.998	1256.46	49.7	0.4027	1.36225	0.0001276	63.47	0.008	0.0001
FS36	Bleed3.Fl_O	49.20	138.283	1293.52	184.50	0.0000	8.26	130.007	1272.43	49.3	0.3021	1.36225	0.0001276	49.19	0.006	0.0001
FS4	Burner.Fl_O	50.20	135.099	2543.68	159.54	0.0204	12.09	127.608	2510.54	74.6	0.2988	1.29507	0.0001276	49.19	0.006	0.0248
FS45	HPT.Fl_O	66.94	31.404	1662.41	-1.53	0.0152	56.08	28.260	1619.23	265.4	0.4004	1.33128	0.0001276	65.93	0.008	0.0186
FS49	LPT.Fl_O	67.72	7.206	1183.98	-126.43	0.0151	208.65	6.211	1138.28	860.2	0.4719	1.35871	0.0001276	66.71	0.009	0.0184
FS5	TEGV.Fl_O	67.72	7.206	1184.04	-126.43	0.0151	208.65	6.211	1138.35	860.2	0.4719	1.35871	0.0001276	66.71	0.009	0.0184
FS8	Core_Nozz.Fl_O	67.72	7.206	1184.18	-126.43	0.0151	208.66	3.842	1000.91	613.4	1.0000	1.35870	0.0001276	66.71	0.009	0.0184
FS17	FanDuctLkg.Fl_O	372.46	8.040	530.74	-3.46	0.0000	688.70	6.674	503.23	2606.7	0.5226	1.40006	0.0000308	372.44	0.011	0.0000
FS171	Bleed15.Fl_O	372.46	8.040	530.74	-3.46	0.0000	688.70	6.485	499.13	2481.9	0.5625	1.40006	0.0000308	372.44	0.011	0.0000
FS172	FanDuct.Fl_O	372.46	8.040	530.74	-3.46	0.0000	688.70	6.485	499.13	2481.9	0.5625	1.40006	0.0000308	372.44	0.011	0.0000
FS173	Byp_Nozz.Fl_O	372.46	8.040	530.74	-3.46	0.0000	688.70	4.246	442.16	2006.9	1.0000	1.40006	0.0000308	372.44	0.011	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	999.83	1.556	0.9070	3842.004	1.1486	0.9126	-8673.5	62.44	29.36
LPC	179.07	2.384	0.8662	3842.004	1.3253	0.8814	-3405.0	4.01	3.17
HPC	86.48	11.224	0.8614	10051.885	2.1116	0.8984	-15552.6	33.26	31.97
HPT	12.09	4.302	0.9079	216.594	1.3570	0.8887	15552.6		
LPT	56.08	4.358	0.9114	88.942	1.4013	0.8940	12078.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1161.70	1.543	0.9088	3805.371	0.0589	0.8607	1.0235	0.9980	0.9905
LPC	143.08	2.430	0.8208	1.015	0.0000	1.2516	0.9682	1.0554	0.0003
HPC	78.66	10.742	0.8703	9783.908	12.8557	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.210	0.9079	1.302	4.2105	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.525	0.9181	1.001	3.5255	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3594.67	10596.3

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4719	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5833	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10923.9	7477.5	15552.6
LP_Shaft	3626.4	17493.2	12078.5

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.4551	959.23	100.07	31.404
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7806	959.23	100.07	7.206
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	925.05	91.63	40.032
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1134.78	143.97	90.417
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	925.05	91.63	40.032
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1293.52	184.50	138.283
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	925.05	91.63	40.032

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	612.57	15.64	12.320
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.6175	1293.52	184.50	135.099
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.6655	1293.52	184.50	75.785
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1293.52	184.50	138.283
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1293.52	184.50	138.283
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1293.52	184.50	138.283
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	530.74	-3.46	8.040
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	530.74	-3.46	8.040
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	530.74	-3.46	8.040
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	530.74	-3.46	8.040

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2543.66	0.9995	0.0230	1.00413	0.02041

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.084	0.9813	1.0000	0.9800	613.40	1.000	1503.8	3400.5
Byp_Nozz	2.325	0.9815	1.0000	0.9800	2006.86	1.000	1010.5	13279.3

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****************************************************************************************************************************************
Date:05/13/13    Time:09:32:31    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    72
Temperature Stator 1 inlet: 459.59    Stator 1 exit: 475.58    Stator 2 inlet: 495.12    Stator 2 exit: 503.42
            Stator 3 inlet: 526.55    Stator 3 exit: 534.79    Stator 4 inlet: 556.68    Stator 4 exit: 564.21
            Stator 5 inlet: 581.74    Stator 5 exit: 588.81             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity        10.00
Fan Face Relative Humidity        3.46
Fan Bypass Relative Humidity      0.25
LPC Inlet Relative Humidity       1.81
LPC Exit Relative Humidity        0.02
HPC Relative Humidity             0.00
Drop Diameter                 0.0000250    Inlet Length                        40.00
Ambient Flow Velocity            776.30    Fan/LPC Inlet Flow Velocity        406.15
Ambient Static Pressure            3.46    Fan/LPC Inlet Static Pressure        4.65
Ambient Static Temperature       411.85    Fan/LPC Inlet Static Temperature   448.35
Additional Water at LPC Exit     0.0000997
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	434.93	5855.8	0.5946	3481.93	5.6337	776.30	26.124	1.304	72.700	2513.3	2363.4	1635.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	434.93	5.170	462.10	-19.92	0.0000	1166.95	3.458	411.85	3560.0	0.7800	1.40081	0.0000308	434.92	0.013	0.0000
FS1	Inlet.Fl_O	434.93	5.170	462.10	-19.92	0.0000	1166.95	4.146	433.81	4168.2	0.5703	1.40081	0.0000308	434.92	0.013	0.0000
FS12	Splitter.Fl_02	369.37	5.167	462.10	-19.92	0.0000	991.53	4.136	433.58	3531.8	0.5728	1.40081	0.0000308	369.35	0.011	0.0000
FS2	Splitter.Fl_01	65.56	5.167	462.10	-19.92	0.0000	176.00	4.650	448.35	830.5	0.3912	1.40081	0.0000308	65.56	0.002	0.0000
FS14	Fan.Fl_O	369.37	7.961	529.11	-3.85	0.0000	688.70	6.608	501.68	2606.7	0.5226	1.40008	0.0000308	369.35	0.011	0.0000
FS23	LPC.Fl_O	65.56	12.257	611.02	15.82	0.0000	85.32	11.096	593.93	412.6	0.3799	1.39854	0.0000308	65.56	0.002	0.0000
FS24	VaporIN.Fl_O	65.57	12.257	611.19	15.29	0.0000	85.34	11.095	594.08	412.6	0.3801	1.39853	0.0001305	65.56	0.009	0.0001
FS25	Bleed2.Fl_O	65.57	12.257	611.19	15.29	0.0000	85.34	11.095	594.08	412.6	0.3801	1.39853	0.0001305	65.56	0.009	0.0001
FS3	HPC.Fl_O	62.39	135.057	1283.94	182.02	0.0000	10.68	121.022	1246.89	49.7	0.4039	1.36284	0.0001305	62.38	0.008	0.0001
FS36	Bleed3.Fl_O	48.35	135.057	1283.94	182.02	0.0000	8.28	126.929	1262.87	49.3	0.3029	1.36284	0.0001305	48.35	0.006	0.0001
FS4	Burner.Fl_O	49.32	131.946	2513.27	157.61	0.0200	12.09	124.628	2480.43	74.6	0.2987	1.29624	0.0001305	48.35	0.006	0.0243
FS45	HPT.Fl_O	65.77	30.656	1642.57	-1.53	0.0149	56.11	27.584	1599.73	265.4	0.4005	1.33245	0.0001305	64.79	0.008	0.0183
FS49	LPT.Fl_O	66.54	7.034	1169.25	-124.80	0.0148	208.71	6.062	1123.99	860.2	0.4718	1.35985	0.0001305	65.56	0.009	0.0181
FS5	TEGV.Fl_O	66.54	7.034	1169.32	-124.80	0.0148	208.72	6.062	1124.05	860.2	0.4718	1.35984	0.0001305	65.56	0.009	0.0181
FS8	Core_Nozz.Fl_O	66.54	7.034	1169.45	-124.80	0.0148	208.73	3.749	988.01	613.4	1.0000	1.35983	0.0001305	65.56	0.009	0.0181
FS17	FanDuctLkg.Fl_O	369.37	7.961	529.11	-3.85	0.0000	688.70	6.608	501.68	2606.7	0.5226	1.40008	0.0000308	369.35	0.011	0.0000
FS171	Bleed15.Fl_O	369.37	7.961	529.11	-3.85	0.0000	688.70	6.422	497.59	2481.9	0.5625	1.40008	0.0000308	369.35	0.011	0.0000
FS172	FanDuct.Fl_O	369.37	7.961	529.11	-3.85	0.0000	688.70	6.422	497.59	2481.9	0.5625	1.40008	0.0000308	369.35	0.011	0.0000
FS173	Byp_Nozz.Fl_O	369.37	7.961	529.11	-3.85	0.0000	688.70	4.204	440.80	2006.9	1.0000	1.40008	0.0000308	369.35	0.011	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	991.53	1.541	0.9070	3810.950	1.1450	0.9125	-8396.5	67.56	30.09
LPC	176.00	2.372	0.8684	3810.950	1.3223	0.8833	-3315.8	4.29	3.38
HPC	85.34	11.019	0.8615	10019.853	2.1007	0.8982	-15092.4	34.12	32.77
HPT	12.09	4.304	0.9073	216.963	1.3577	0.8874	15092.4		
LPT	56.11	4.358	0.9107	88.755	1.4021	0.8932	11712.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1152.06	1.528	0.9089	3774.613	0.0583	0.8607	1.0235	0.9980	0.9905
LPC	141.07	2.398	0.8201	1.007	0.0000	1.2475	0.9816	1.0588	0.0003
HPC	77.62	10.547	0.8704	9752.731	12.7846	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.213	0.9073	1.304	4.2125	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.526	0.9175	0.998	3.5257	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3560.00	10494.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4718	860.21
FanDuct	0.0000	0.5625	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6337	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10876.9	7287.7	15092.4
LP_Shaft	3597.1	17101.9	11712.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.4130	953.58	98.66	30.656
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.7672	953.58	98.66	7.034
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	919.81	90.32	39.273
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1127.04	142.00	88.393
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	919.81	90.32	39.273
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1283.94	182.02	135.057
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	919.81	90.32	39.273

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	611.19	15.29	12.257
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	7.4868	1283.94	182.02	131.946
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	6.5511	1283.94	182.02	74.008
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1283.94	182.02	135.057
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1283.94	182.02	135.057
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1283.94	182.02	135.057
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	529.11	-3.85	7.961
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	529.11	-3.85	7.961
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	529.11	-3.85	7.961
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	529.11	-3.85	7.961

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2513.25	0.9995	0.0230	0.96720	0.02001

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.034	0.9811	1.0000	0.9800	613.40	1.000	1494.6	3269.3
Byp_Nozz	2.302	0.9815	1.0000	0.9800	2006.86	1.000	1009.0	13080.6

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**********************************************************************************************************************************
Date:05/13/13    Time:09:33:03    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    69
Temperature Stator 1 inlet: 460.43    Stator 1 exit: 476.17    Stator 2 inlet: 495.48    Stator 2 exit: 503.78
            Stator 3 inlet: 526.45    Stator 3 exit: 534.66    Stator 4 inlet: 556.09    Stator 4 exit: 563.58
            Stator 5 inlet: 580.79    Stator 5 exit: 587.80            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.36
Fan Bypass Relative Humidity       0.26
LPC Inlet Relative Humidity        1.77
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                 0.0000250    Inlet Length                        40.00
Ambient Flow Velocity           776.30    Fan/LPC Inlet Flow Velocity        397.91
Ambient Static Pressure           3.46    Fan/LPC Inlet Static Pressure        4.67
Ambient Static Temperature      411.85    Fan/LPC Inlet Static Temperature   448.90
Additional Water at LPC Exit    0.0001025

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS      OPR       EPR       PowerSet      T4      T41      T49
 0.780   35000.0    18.00    430.86     5637.1    0.5955    3356.62    5.6872    776.30   25.519     1.267       69.900      2484.5   2336.9   1615.8


                                        FLOW STATION DATA
                                  W        Pt        Tt        ht     FAR        Wc        Ps        Ts      Aphy      MN      gamt        WAR      Wair    WH2O  H2O frac
FS0   Ambient.Fl_O           430.86     5.170    462.10    -19.92  0.0000   1156.04     3.458    411.85    3526.7  0.7800   1.40081  0.0000308    430.85   0.013    0.0000
FS1   Inlet.Fl_O             430.86     5.170    462.10    -19.92  0.0000   1156.04     4.172    434.59    4168.2  0.5619   1.40081  0.0000308    430.85   0.013    0.0000
FS12  Splitter.Fl_02         366.43     5.167    462.10    -19.92  0.0000    983.66     4.158    434.24    3531.8  0.5657   1.40081  0.0000308    366.42   0.011    0.0000
FS2   Splitter.Fl_01          64.43     5.167    462.10    -19.92  0.0000    172.96     4.670    448.90     830.5  0.3830   1.40081  0.0000308     64.43   0.002    0.0000
FS14  Fan.Fl_O               366.43     7.886    527.53     -4.23  0.0000    688.70     6.546    500.18    2606.7  0.5226   1.40011  0.0000308    366.42   0.011    0.0000
FS23  LPC.Fl_O                64.43    12.175    609.45     15.45  0.0000     84.31    11.052    592.87     412.6  0.3745   1.39858  0.0000308     64.43   0.002    0.0000
FS24  VaporIN.Fl_O            64.44    12.175    609.62     14.90  0.0000     84.33    11.051    593.02     412.6  0.3746   1.39856  0.0001334     64.43   0.009    0.0001
FS25  Bleed2.Fl_O             64.44    12.175    609.62     14.90  0.0000     84.33    11.051    593.02     412.6  0.3746   1.39856  0.0001334     64.43   0.009    0.0001
FS3   HPC.Fl_O                61.31   131.931   1274.71    179.63  0.0000     10.71   118.146   1237.68      49.7  0.4050   1.36342  0.0001334     61.30   0.008    0.0001
FS36  Bleed3.Fl_O             47.52   131.931   1274.71    179.63  0.0000      8.30   123.950   1253.66      49.3  0.3037   1.36342  0.0001334     47.51   0.006    0.0001
FS4   Burner.Fl_O             48.45   128.892   2484.47    155.73  0.0196     12.09   121.743   2451.90      74.6  0.2985   1.29737  0.0001334     47.51   0.006    0.0239
FS45  HPT.Fl_O                64.62    29.926   1623.10     -1.60  0.0146     56.13    26.924   1580.63     265.4  0.4005   1.33361  0.0001334     63.68   0.008    0.0179
FS49  LPT.Fl_O                65.37     6.867   1154.86   -123.25  0.0145    208.76     5.917   1110.05     860.2  0.4718   1.36096  0.0001334     64.43   0.009    0.0177
FS5   TEGV.Fl_O               65.37     6.867   1154.93   -123.25  0.0145    208.76     5.917   1110.11     860.2  0.4718   1.36096  0.0001334     64.43   0.009    0.0177
FS8   Core_Nozz.Fl_O          65.37     6.867   1155.07   -123.25  0.0145    208.78     3.658    975.43     613.4  1.0000   1.36095  0.0001334     64.43   0.009    0.0177
FS17  FanDuctLkg.Fl_O        366.43     7.886    527.53     -4.23  0.0000    688.70     6.546    500.18    2606.7  0.5226   1.40011  0.0000308    366.42   0.011    0.0000
FS171 Bleed15.Fl_O           366.43     7.886    527.53     -4.23  0.0000    688.70     6.361    496.10    2481.9  0.5625   1.40011  0.0000308    366.42   0.011    0.0000
FS172 FanDuct.Fl_O           366.43     7.886    527.53     -4.23  0.0000    688.70     6.361    496.10    2481.9  0.5625   1.40011  0.0000308    366.42   0.011    0.0000
FS173 Byp_Nozz.Fl_O          366.43     7.886    527.53     -4.23  0.0000    688.70     4.164    439.48    2006.9  1.0000   1.40011  0.0000308    366.42   0.011    0.0000

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff        Nc       TR   efPoly       pwr       SMN       SMW
Fan       983.66   1.526    0.9074  3779.269   1.1416   0.9127   -8132.9     74.05     30.79
LPC       172.96   2.356    0.8699  3779.269   1.3189   0.8846   -3224.0      4.58      3.57
HPC        84.33  10.836    0.8615  9991.297   2.0910   0.8980  -14653.9     34.92     33.50
HPT        12.09   4.307    0.9067   217.315   1.3590   0.8875   14653.9
LPT        56.13   4.358    0.9100    88.543   1.4029   0.8923   11356.9

TURBOMACHINERY MAP DATA
            WcMap    PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan       1142.91   1.514   0.9092   3743.234    0.0578      0.8607    1.0235    0.9980    0.9905
LPC        139.04   2.366   0.8195      0.998    0.0000      1.2440    0.9929    1.0616    0.0003
HPC         76.69  10.373   0.8704   9724.936   12.7199      1.0995    1.0494    0.9898    0.9733
HPT          0.96   4.215   0.9067      1.306    4.2154     12.6299    0.9723    1.0000    0.0003
LPT          0.86   3.526   0.9168      0.996    3.5257     65.2590    0.7521    0.9926    0.0005
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===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3526.71	10396.0

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4718	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6872	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10832.0	7105.3	14653.9
LP_Shaft	3567.2	16721.1	11356.9

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3713	948.00	97.26	29.926
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7539	948.00	97.26	6.867
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	914.63	89.03	38.521
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1119.53	140.09	86.423
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	914.63	89.03	38.521
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1274.71	179.63	131.931
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	914.63	89.03	38.521

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	609.62	14.90	12.175
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.3575	1274.71	179.63	128.892
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.4380	1274.71	179.63	72.283
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1274.71	179.63	131.931
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1274.71	179.63	131.931
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1274.71	179.63	131.931
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	527.53	-4.23	7.886
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	527.53	-4.23	7.886
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	527.53	-4.23	7.886
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	527.53	-4.23	7.886

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2484.45	0.9995	0.0230	0.93240	0.01963

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.986	0.9808	1.0000	0.9800	613.40	1.000	1485.6	3141.2
Byp_Nozz	2.280	0.9815	1.0000	0.9800	2006.86	1.000	1007.5	12891.8

25μm, ISA +36R

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**********************************************************************************************************************************
Date:05/13/13    Time:10:00:09    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 27/ 41/ 1/25    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 468.75    Stator 1 exit: 488.22    Stator 2 inlet: 510.83    Stator 2 exit: 518.50
            Stator 3 inlet: 548.53    Stator 3 exit: 556.97    Stator 4 inlet: 585.11    Stator 4 exit: 593.25
            Stator 5 inlet: 615.04    Stator 5 exit: 622.97            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.34
Fan Bypass Relative Humidity       0.21
LPC Inlet Relative Humidity        2.54
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          793.07    Fan/LPC Inlet Flow Velocity        493.51
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.45
Ambient Static Temperature     429.85    Fan/LPC Inlet Static Temperature   461.98
Additional Water at LPC Exit   0.0001248

                                    SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS      OPR       EPR       PowerSet      T4      T41      T49
 0.780   35000.0    36.00    465.49     8112.6    0.6156    4993.72    5.2964    793.07   31.925     1.687      100.000      2926.1   2747.3   1915.5


                                    FLOW STATION DATA
                                 W        Pt        Tt        ht     FAR        Wc        Ps        Ts      Aphy      MN      gamt        WAR      Wair    WH2O  H2O frac
FS0   Ambient.Fl_O          465.49     5.170    482.28    -15.41  0.0000   1275.96     3.458    429.85    3892.7  0.7800   1.40064  0.0000871    465.45   0.041    0.0001
FS1   Inlet.Fl_O            465.49     5.170    482.28    -15.41  0.0000   1275.96     3.838    442.89    4168.2  0.6662   1.40064  0.0000871    465.45   0.041    0.0001
FS12  Splitter.Fl_02        391.56     5.167    482.28    -15.41  0.0000   1073.85     3.865    443.82    3531.8  0.6575   1.40064  0.0000871    391.53   0.034    0.0001
FS2   Splitter.Fl_01         73.93     5.167    482.28    -15.41  0.0000    202.75     4.446    461.98     830.5  0.4682   1.40064  0.0000871     73.92   0.006    0.0001
FS14  Fan.Fl_O              391.56     8.746    568.20      5.21  0.0000    688.62     7.261    538.78    2606.7  0.5227   1.39944  0.0000871    391.53   0.034    0.0001
FS23  LPC.Fl_O               73.93    12.698    652.75     25.55  0.0000     95.99    11.119    628.55     412.6  0.4400   1.39742  0.0000871     73.92   0.006    0.0001
FS24  VaporIN.Fl_O           73.94    12.698    652.96     24.89  0.0000     96.02    11.118    628.73     412.6  0.4401   1.39740  0.0002119     73.92   0.016    0.0002
FS25  Bleed2.Fl_O            73.94    12.698    652.96     24.89  0.0000     96.02    11.118    628.73     412.6  0.4401   1.39740  0.0002119     73.92   0.016    0.0002
FS3   HPC.Fl_O               70.35   165.047   1433.44    220.42  0.0000     10.41   148.847   1395.15      49.7  0.3930   1.35403  0.0002119     70.34   0.015    0.0002
FS36  Bleed3.Fl_O            54.52   165.047   1433.44    220.42  0.0000      8.07   155.636   1411.58      49.3  0.2955   1.35403  0.0002119     54.51   0.012    0.0002
FS4   Burner.Fl_O            55.91   161.246   2926.06    188.18  0.0254     12.10   152.349   2889.29      74.6  0.3007   1.28088  0.0002119     54.51   0.012    0.0308
FS45  HPT.Fl_O               74.46    37.748   1924.78      3.18  0.0190     55.84    34.006   1876.83     265.4  0.4007   1.31717  0.0002119     73.06   0.015    0.0232
FS49  LPT.Fl_O               75.33     8.694   1382.66   -142.81  0.0188    207.89     7.501   1331.26     860.2  0.4726   1.34396  0.0002119     73.92   0.016    0.0229
FS5   TEGV.Fl_O              75.33     8.694   1382.73   -142.81  0.0188    207.90     7.501   1331.33     860.2  0.4726   1.34396  0.0002119     73.92   0.016    0.0229
FS8   Core_Nozz.Fl_O         75.33     8.694   1382.85   -142.81  0.0188    207.91     4.655   1175.94     613.4  1.0000   1.34395  0.0002119     73.92   0.016    0.0229
FS17  FanDuctLkg.Fl_O        391.56     8.746    568.20      5.21  0.0000    688.62     7.261    538.78    2606.7  0.5227   1.39944  0.0000871    391.53   0.034    0.0001
FS171 Bleed15.Fl_O           391.56     8.746    568.20      5.21  0.0000    688.62     7.056    534.39    2481.9  0.5626   1.39944  0.0000871    391.53   0.034    0.0001
FS172 FanDuct.Fl_O           391.56     8.746    568.20      5.21  0.0000    688.62     7.056    534.39    2481.9  0.5626   1.39944  0.0000871    391.53   0.034    0.0001
FS173 Byp_Nozz.Fl_O          391.56     8.746    568.20      5.21  0.0000    688.62     4.619    473.44    2006.9  1.0000   1.39944  0.0000871    391.53   0.034    0.0001

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR      eff         Nc        TR   efPoly        pwr       SMN      SMW
Fan      1073.85   1.693   0.9109   4120.705   1.1782   0.9173   -11421.0     38.39    23.45
LPC       202.75   2.457   0.8276   4120.705   1.3535   0.8477    -4284.4      2.96     2.22
HPC        96.02  12.998   0.8587  10334.072   2.1953   0.8978   -19959.6     26.51    25.70
HPT        12.10   4.272   0.9122    214.352   1.3425   0.8900    19959.6
LPT        55.84   4.342   0.9168     90.570   1.3886   0.9005    15705.8

TURBOMACHINERY MAP DATA
           WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan      1247.70   1.677   0.9128   4081.415    0.0636      0.8607    1.0235    0.9980    0.9905
LPC       165.11   2.727   0.8329      1.088    0.0000      1.2280    0.8437    0.9936    0.0003
HPC        87.32  12.433   0.8676  10058.573   13.4500      1.0995    1.0494    0.9898    0.9733
HPT         0.96   4.181   0.9122      1.288    4.1810     12.6299    0.9723    1.0000    0.0003
LPT         0.86   3.514   0.9236      1.019    3.5135     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3892.72	11474.1

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4726	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2964	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11595.0	9041.0	19959.6
LP_Shaft	3973.5	20759.7	15705.8

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.7209	1051.90	122.65	37.748
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.8651	1051.90	122.65	8.694
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1012.73	112.88	46.214
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1252.55	173.49	107.154
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1012.73	112.88	46.214
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1433.44	220.42	165.047
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1012.73	112.88	46.214

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	652.96	24.89	12.698
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	8.4423	1433.44	220.42	161.246
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	7.3872	1433.44	220.42	90.605
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1433.44	220.42	165.047
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1433.44	220.42	165.047
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1433.44	220.42	165.047
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	568.20	5.21	8.746
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	568.20	5.21	8.746
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	568.20	5.21	8.746
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	568.20	5.21	8.746

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2926.06	0.9995	0.0230	1.38714	0.02545

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.514	0.9810	1.0000	0.9800	613.40	1.000	1621.8	4531.2
Byp_Nozz	2.529	0.9811	1.0000	0.9800	2006.86	1.000	1045.6	15055.4

```
**********************************************************************************************************************************
Date:05/13/13    Time:10:00:41    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    75
Temperature Stator 1 inlet: 478.73    Stator 1 exit: 495.69    Stator 2 inlet: 516.30    Stator 2 exit: 524.95
            Stator 3 inlet: 549.58    Stator 3 exit: 558.21    Stator 4 inlet: 581.50    Stator 4 exit: 589.41
            Stator 5 inlet: 608.02    Stator 5 exit: 615.47            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.82
Fan Bypass Relative Humidity       0.30
LPC Inlet Relative Humidity        2.06
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          793.07    Fan/LPC Inlet Flow Velocity        423.28
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.63
Ambient Static Temperature     429.85    Fan/LPC Inlet Static Temperature   467.35
Additional Water at LPC Exit   0.0001559

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.780   35000.0    36.00    429.86     6091.0    0.6090    3709.16    5.5867    793.07    26.696     1.344         75.600    2640.9   2483.5   1723.4


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht      FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair    WH2O  H2O frac
FS0   Ambient.Fl_O          429.86     5.170    482.28    -15.41   0.0000   1178.28     3.458    429.85    3594.7  0.7800   1.40064   0.0000871    429.82   0.037    0.0001
FS1   Inlet.Fl_O            429.86     5.170    482.28    -15.41   0.0000   1178.28     4.118    451.90    4168.2  0.5792   1.40064   0.0000871    429.82   0.037    0.0001
FS12  Splitter.Fl_02        364.60     5.167    482.28    -15.41   0.0000    999.89     4.112    451.76    3531.8  0.5806   1.40064   0.0000871    364.56   0.032    0.0001
FS2   Splitter.Fl_01         65.26     5.167    482.28    -15.41   0.0000    178.98     4.629    467.35     830.5  0.3993   1.40064   0.0000871     65.26   0.006    0.0001
FS14  Fan.Fl_O              364.60     8.040    553.91      1.77   0.0000    688.65     6.675    525.21    2606.7  0.5226   1.39969   0.0000871    364.56   0.032    0.0001
FS23  LPC.Fl_O               65.26    12.330    639.17     22.28   0.0000     86.35    11.130    620.80     412.6  0.3856   1.39781   0.0000871     65.26   0.006    0.0001
FS24  VaporIN.Fl_O           65.27    12.330    639.41     21.44   0.0000     86.38    11.129    621.02     412.6  0.3857   1.39778   0.0002430     65.26   0.016    0.0002
FS25  Bleed2.Fl_O            65.27    12.330    639.41     21.44   0.0000     86.38    11.129    621.02     412.6  0.3857   1.39778   0.0002430     65.26   0.016    0.0002
FS3   HPC.Fl_O               62.11   138.011   1345.21    197.23   0.0000     10.65   123.758   1306.93      49.7  0.4031   1.35911   0.0002430     62.09   0.015    0.0002
FS36  Bleed3.Fl_O            48.13   138.011   1345.21    197.23   0.0000      8.25   129.754   1323.44      49.3  0.3024   1.35911   0.0002430     48.12   0.012    0.0002
FS4   Burner.Fl_O            49.16   134.833   2640.85    170.73   0.0214     12.09   127.369   2606.79      74.6  0.2992   1.29152   0.0002430     48.12   0.012    0.0261
FS45  HPT.Fl_O               65.54    31.391   1731.20      3.30   0.0160     56.06    28.250   1686.62     265.4  0.4009   1.32751   0.0002430     64.49   0.016    0.0196
FS49  LPT.Fl_O               66.30     7.216   1235.99   -127.06   0.0158    208.45     6.221   1188.74     860.2  0.4720   1.35492   0.0002430     65.26   0.016    0.0194
FS5   TEGV.Fl_O              66.30     7.216   1236.05   -127.06   0.0158    208.45     6.221   1188.80     860.2  0.4721   1.35491   0.0002430     65.26   0.016    0.0194
FS8   Core_Nozz.Fl_O         66.30     7.216   1236.19   -127.06   0.0158    208.46     3.851   1046.46     613.4  1.0000   1.35490   0.0002430     65.26   0.016    0.0194
FS17  FanDuctLkg.Fl_O        364.60     8.040    553.91      1.77   0.0000    688.65     6.675    525.21    2606.7  0.5226   1.39969   0.0000871    364.56   0.032    0.0001
FS171 Bleed15.Fl_O           364.60     8.040    553.91      1.77   0.0000    688.65     6.486    520.93    2481.9  0.5626   1.39969   0.0000871    364.56   0.032    0.0001
FS172 FanDuct.Fl_O           364.60     8.040    553.91      1.77   0.0000    688.65     6.486    520.93    2481.9  0.5626   1.39969   0.0000871    364.56   0.032    0.0001
FS173 Byp_Nozz.Fl_O          364.60     8.040    553.91      1.77   0.0000    688.65     4.246    461.50    2006.9  1.0000   1.39969   0.0000871    364.56   0.032    0.0001

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR      eff        Nc       TR   efPoly       pwr      SMN      SMW
Fan       999.89   1.556   0.9070  3842.318   1.1485   0.9126   -8863.9    62.41    29.35
LPC       178.98   2.386   0.8663  3842.318   1.3253   0.8815   -3479.9     4.01     3.17
HPC        86.38  11.193   0.8615 10048.502   2.1038   0.8982  -15840.8    33.48    32.19
HPT        12.09   4.295   0.9089   217.106   1.3534   0.8892   15840.8
LPT        56.06   4.350   0.9129    89.048   1.3979   0.8960   12343.7

TURBOMACHINERY MAP DATA
           WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan      1161.78   1.543   0.9088   3805.682    0.0589      0.8607    1.0235    0.9980    0.9905
LPC       143.10   2.430   0.8208      1.015    0.0000      1.2507    0.9694    1.0555    0.0003
HPC        78.56  10.712   0.8704   9780.616   12.8362      1.0995    1.0494    0.9898    0.9733
HPT         0.96   4.204   0.9089      1.305    4.2040     12.6299    0.9723    1.0000    0.0003
LPT         0.86   3.520   0.9197      1.002    3.5198     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3594.73	10595.7
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5626	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5867	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11156.9	7457.0	15840.8
LP_Shaft	3705.1	17497.9	12343.7

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.4020	999.21	109.34	31.391
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.7637	999.21	109.34	7.216
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	963.79	100.55	39.980
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1180.99	155.04	90.253
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	963.79	100.55	39.980
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1345.21	197.23	138.011
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	963.79	100.55	39.980

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	639.41	21.44	12.330
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	7.4528	1345.21	197.23	134.833
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	6.5213	1345.21	197.23	75.664
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1345.21	197.23	138.011
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1345.21	197.23	138.011
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1345.21	197.23	138.011
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	553.91	1.77	8.040
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	553.91	1.77	8.040
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	553.91	1.77	8.040
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	553.91	1.77	8.040

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2640.84	0.9995	0.0230	1.03032	0.02141

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.087	0.9813	1.0000	0.9800	613.40	1.000	1535.8	3405.8
Byp_Nozz	2.325	0.9815	1.0000	0.9800	2006.86	1.000	1032.4	13280.9

```
**********************************************************************************************************************************
Date:05/13/13    Time:10:01:13    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    72
Temperature Stator 1 inlet: 479.70    Stator 1 exit: 496.41    Stator 2 inlet: 516.81    Stator 2 exit: 525.49
            Stator 3 inlet: 549.63    Stator 3 exit: 558.25    Stator 4 inlet: 581.09    Stator 4 exit: 588.96
            Stator 5 inlet: 607.25    Stator 5 exit: 614.64            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.70
Fan Bypass Relative Humidity       0.31
LPC Inlet Relative Humidity        2.02
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                 0.0000250    Inlet Length                        40.00
Ambient Flow Velocity           793.07    Fan/LPC Inlet Flow Velocity        414.72
Ambient Static Pressure           3.46    Fan/LPC Inlet Static Pressure        4.65
Ambient Static Temperature      429.85    Fan/LPC Inlet Static Temperature    467.94
Additional Water at LPC Exit    0.0001602
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	36.00	425.73	5862.8	0.6094	3572.69	5.6367	793.07	26.076	1.306	72.700	2609.4	2454.5	1702.5

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	425.73	5.170	482.28	-15.41	0.0000	1166.96	3.458	429.85	3560.2	0.7800	1.40064	0.0000871	425.69	0.037	0.0001
FS1	Inlet.Fl_O	425.73	5.170	482.28	-15.41	0.0000	1166.96	4.146	452.76	4168.2	0.5703	1.40064	0.0000871	425.69	0.037	0.0001
FS12	Splitter.Fl_02	361.58	5.167	482.28	-15.41	0.0000	991.62	4.136	452.51	3531.8	0.5729	1.40064	0.0000871	361.55	0.031	0.0001
FS2	Splitter.Fl_01	64.15	5.167	482.28	-15.41	0.0000	175.92	4.650	467.94	830.5	0.3910	1.40064	0.0000871	64.14	0.006	0.0001
FS14	Fan.Fl_O	361.58	7.962	552.21	1.37	0.0000	688.66	6.609	523.60	2606.7	0.5226	1.39972	0.0000871	361.55	0.031	0.0001
FS23	LPC.Fl_O	64.15	12.266	637.72	21.93	0.0000	85.22	11.106	619.95	412.6	0.3795	1.39785	0.0000871	64.14	0.006	0.0001
FS24	VaporIN.Fl_O	64.16	12.266	637.97	21.07	0.0000	85.25	11.105	620.17	412.6	0.3797	1.39782	0.0002473	64.14	0.016	0.0002
FS25	Bleed2.Fl_O	64.16	12.266	637.97	21.07	0.0000	85.25	11.105	620.17	412.6	0.3797	1.39782	0.0002473	64.14	0.016	0.0002
FS3	HPC.Fl_O	61.05	134.805	1335.40	194.66	0.0000	10.68	120.800	1297.12	49.7	0.4043	1.35969	0.0002473	61.03	0.015	0.0002
FS36	Bleed3.Fl_O	47.31	134.805	1335.40	194.66	0.0000	8.28	126.695	1313.62	49.3	0.3032	1.35969	0.0002473	47.30	0.012	0.0002
FS4	Burner.Fl_O	48.30	131.701	2609.43	168.75	0.0210	12.09	124.411	2575.67	74.6	0.2990	1.29271	0.0002473	47.30	0.012	0.0256
FS45	HPT.Fl_O	64.40	30.644	1710.19	3.30	0.0157	56.08	27.575	1666.00	265.4	0.4009	1.32870	0.0002473	63.39	0.016	0.0192
FS49	LPT.Fl_O	65.15	7.043	1220.24	-125.36	0.0155	208.51	6.072	1173.45	860.2	0.4720	1.35612	0.0002473	64.14	0.016	0.0190
FS5	TEGV.Fl_O	65.15	7.043	1220.30	-125.36	0.0155	208.52	6.071	1173.51	860.2	0.4720	1.35611	0.0002473	64.14	0.016	0.0190
FS8	Core_Nozz.Fl_O	65.15	7.043	1220.44	-125.36	0.0155	208.53	3.757	1032.63	613.4	1.0000	1.35610	0.0002473	64.14	0.016	0.0190
FS17	FanDuctLkg.Fl_O	361.58	7.962	552.21	1.37	0.0000	688.66	6.609	523.60	2606.7	0.5226	1.39972	0.0000871	361.55	0.031	0.0001
FS171	Bleed15.Fl_O	361.58	7.962	552.21	1.37	0.0000	688.66	6.423	519.33	2481.9	0.5626	1.39972	0.0000871	361.55	0.031	0.0001
FS172	FanDuct.Fl_O	361.58	7.962	552.21	1.37	0.0000	688.66	6.423	519.33	2481.9	0.5626	1.39972	0.0000871	361.55	0.031	0.0001
FS173	Byp_Nozz.Fl_O	361.58	7.962	552.21	1.37	0.0000	688.66	4.205	460.08	2006.9	1.0000	1.39972	0.0000871	361.55	0.031	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	991.62	1.541	0.9070	3811.363	1.1450	0.9125	-8581.8	67.48	30.07
LPC	175.92	2.374	0.8684	3811.363	1.3223	0.8833	-3388.8	4.29	3.38
HPC	85.25	10.991	0.8615	10017.005	2.0932	0.8980	-15375.4	34.34	32.98
HPT	12.09	4.298	0.9083	217.479	1.3545	0.8888	15375.4		
LPT	56.08	4.351	0.9124	88.871	1.3988	0.8953	11970.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1152.16	1.528	0.9089	3775.022	0.0583	0.8607	1.0235	0.9980	0.9905
LPC	141.10	2.398	0.8201	1.007	0.0000	1.2467	0.9825	1.0588	0.0003
HPC	77.54	10.520	0.8704	9749.958	12.7655	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.206	0.9083	1.307	4.2064	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.520	0.9192	1.000	3.5204	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3560.18	10493.9

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6367	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11109.4	7268.9	15375.4
LP_Shaft	3675.2	17106.7	11970.5

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3610	993.39	107.86	30.644
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7506	993.39	107.86	7.043
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	958.39	99.18	39.224
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1173.05	153.00	88.240
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	958.39	99.18	39.224
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1335.40	194.66	134.805
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	958.39	99.18	39.224

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	637.97	21.07	12.266
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.3254	1335.40	194.66	131.701
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.4099	1335.40	194.66	73.896
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1335.40	194.66	134.805
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1335.40	194.66	134.805
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1335.40	194.66	134.805
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	552.21	1.37	7.962
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	552.21	1.37	7.962
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	552.21	1.37	7.962
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	552.21	1.37	7.962

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2609.41	0.9995	0.0230	0.99241	0.02098

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.037	0.9811	1.0000	0.9800	613.40	1.000	1526.2	3274.0
Byp_Nozz	2.302	0.9815	1.0000	0.9800	2006.86	1.000	1030.8	13082.8

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**********************************************************************************************************************************
Date:05/13/13    Time:10:01:44    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    69
Temperature Stator 1 inlet: 480.59    Stator 1 exit: 497.03    Stator 2 inlet: 517.20    Stator 2 exit: 525.88
            Stator 3 inlet: 549.54    Stator 3 exit: 558.12    Stator 4 inlet: 580.49    Stator 4 exit: 588.31
            Stator 5 inlet: 606.27    Stator 5 exit: 613.59            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.60
Fan Bypass Relative Humidity       0.33
LPC Inlet Relative Humidity        1.98
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          793.07    Fan/LPC Inlet Flow Velocity        406.28
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.67
Ambient Static Temperature     429.85    Fan/LPC Inlet Static Temperature   468.52
Additional Water at LPC Exit   0.0001646
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	36.00	421.74	5644.0	0.6101	3443.24	5.6907	793.07	25.469	1.269	69.900	2579.5	2426.8	1682.6

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	421.74	5.170	482.28	-15.41	0.0000	1156.04	3.458	429.85	3526.9	0.7800	1.40064	0.0000871	421.71	0.037	0.0001
FS1	Inlet.Fl_O	421.74	5.170	482.28	-15.41	0.0000	1156.04	4.172	453.57	4168.2	0.5620	1.40064	0.0000871	421.71	0.037	0.0001
FS12	Splitter.Fl_02	358.71	5.167	482.28	-15.41	0.0000	983.75	4.158	453.20	3531.8	0.5658	1.40064	0.0000871	358.68	0.031	0.0001
FS2	Splitter.Fl_01	63.03	5.167	482.28	-15.41	0.0000	172.87	4.670	468.52	830.5	0.3828	1.40064	0.0000871	63.03	0.005	0.0001
FS14	Fan.Fl_O	358.71	7.887	550.56	0.97	0.0000	688.66	6.547	522.04	2606.7	0.5226	1.39975	0.0000871	358.68	0.031	0.0001
FS23	LPC.Fl_O	63.03	12.183	636.10	21.54	0.0000	84.20	11.062	618.86	412.6	0.3741	1.39789	0.0000871	63.03	0.005	0.0001
FS24	VaporIN.Fl_O	63.05	12.183	636.35	20.65	0.0000	84.23	11.061	619.08	412.6	0.3743	1.39786	0.0002517	63.03	0.016	0.0003
FS25	Bleed2.Fl_O	63.05	12.183	636.35	20.65	0.0000	84.23	11.061	619.08	412.6	0.3743	1.39786	0.0002517	63.03	0.016	0.0003
FS3	HPC.Fl_O	59.99	131.669	1325.83	192.16	0.0000	10.70	117.915	1287.56	49.7	0.4054	1.36027	0.0002517	59.97	0.015	0.0003
FS36	Bleed3.Fl_O	46.49	131.669	1325.83	192.16	0.0000	8.30	123.706	1304.07	49.3	0.3040	1.36027	0.0002517	46.48	0.012	0.0003
FS4	Burner.Fl_O	47.45	128.637	2579.48	166.81	0.0206	12.09	121.513	2546.01	74.6	0.2989	1.29386	0.0002517	46.48	0.012	0.0251
FS45	HPT.Fl_O	63.26	29.912	1690.18	3.23	0.0154	56.11	26.913	1646.33	265.4	0.4009	1.32984	0.0002517	62.29	0.016	0.0189
FS49	LPT.Fl_O	64.00	6.875	1205.38	-123.77	0.0152	208.57	5.926	1159.02	860.2	0.4720	1.35725	0.0002517	63.03	0.016	0.0187
FS5	TEGV.Fl_O	64.00	6.875	1205.45	-123.77	0.0152	208.57	5.926	1159.09	860.2	0.4720	1.35725	0.0002517	63.03	0.016	0.0187
FS8	Core_Nozz.Fl_O	64.00	6.875	1205.58	-123.77	0.0152	208.59	3.666	1019.59	613.4	1.0000	1.35724	0.0002517	63.03	0.016	0.0187
FS17	FanDuctLkg.Fl_O	358.71	7.887	550.56	0.97	0.0000	688.66	6.547	522.04	2606.7	0.5226	1.39975	0.0000871	358.68	0.031	0.0001
FS171	Bleed15.Fl_O	358.71	7.887	550.56	0.97	0.0000	688.66	6.362	517.78	2481.9	0.5626	1.39975	0.0000871	358.68	0.031	0.0001
FS172	FanDuct.Fl_O	358.71	7.887	550.56	0.97	0.0000	688.66	6.362	517.78	2481.9	0.5626	1.39975	0.0000871	358.68	0.031	0.0001
FS173	Byp_Nozz.Fl_O	358.71	7.887	550.56	0.97	0.0000	688.66	4.165	458.70	2006.9	1.0000	1.39975	0.0000871	358.68	0.031	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	983.75	1.526	0.9074	3779.750	1.1416	0.9127	-8312.7	73.94	30.77
LPC	172.87	2.358	0.8699	3779.750	1.3189	0.8845	-3295.1	4.57	3.57
HPC	84.23	10.807	0.8615	9988.260	2.0835	0.8979	-14927.3	35.15	33.72
HPT	12.09	4.301	0.9078	217.834	1.3556	0.8883	14927.3		
LPT	56.11	4.351	0.9117	88.654	1.3996	0.8945	11607.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1143.02	1.514	0.9092	3743.710	0.0578	0.8607	1.0235	0.9980	0.9905
LPC	139.07	2.366	0.8195	0.998	0.0000	1.2430	0.9938	1.0615	0.0003
HPC	76.61	10.345	0.8704	9721.979	12.7004	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.209	0.9078	1.309	4.2091	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.520	0.9185	0.997	3.5204	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3526.88	10395.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6907	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11063.5	7086.4	14927.3
LP_Shaft	3644.7	16727.0	11607.8

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3201	987.62	106.41	29.912
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7376	987.62	106.41	6.875
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	953.02	97.83	38.470
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1165.26	151.00	86.264
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	953.02	97.83	38.470
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1325.83	192.16	131.669
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	953.02	97.83	38.470

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	636.35	20.65	12.183
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.1985	1325.83	192.16	128.637
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.2988	1325.83	192.16	72.166
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1325.83	192.16	131.669
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1325.83	192.16	131.669
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1325.83	192.16	131.669
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	550.56	0.97	7.887
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	550.56	0.97	7.887
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	550.56	0.97	7.887
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	550.56	0.97	7.887

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2579.46	0.9995	0.0230	0.95645	0.02058

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.988	0.9808	1.0000	0.9800	613.40	1.000	1517.1	3145.6
Byp_Nozz	2.281	0.9815	1.0000	0.9800	2006.86	1.000	1029.2	12894.1

50μm, ISA +18R

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**********************************************************************************************************************************
Date:07/05/13    Time:09:22:01    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 29/ 57/ 2/26    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 449.01    Stator 1 exit: 467.65    Stator 2 inlet: 489.24    Stator 2 exit: 496.53
            Stator 3 inlet: 525.31    Stator 3 exit: 533.35    Stator 4 inlet: 560.32    Stator 4 exit: 568.08
            Stator 5 inlet: 588.96    Stator 5 exit: 596.53            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.11
Fan Bypass Relative Humidity       0.16
LPC Inlet Relative Humidity        2.31
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          776.30    Fan/LPC Inlet Flow Velocity        483.44
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.45
Ambient Static Temperature     411.85    Fan/LPC Inlet Static Temperature   442.61
Additional Water at LPC Exit   0.0000127
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	475.58	8100.1	0.5999	4859.43	5.2928	776.30	31.986	1.684	100.000	2818.7	2645.7	1838.6

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	475.58	5.170	462.10	-19.92	0.0000	1276.02	3.458	411.85	3892.7	0.7800	1.40081	0.0000308	475.57	0.015	0.0000
FS1	Inlet.Fl_O	475.58	5.170	462.10	-19.92	0.0000	1276.02	3.838	424.34	4168.2	0.6662	1.40081	0.0000308	475.57	0.015	0.0000
FS12	Splitter.Fl_02	400.01	5.167	462.10	-19.92	0.0000	1073.78	3.865	425.25	3531.8	0.6574	1.40081	0.0000308	399.99	0.012	0.0000
FS2	Splitter.Fl_01	75.58	5.167	462.10	-19.92	0.0000	202.88	4.445	442.61	830.5	0.4686	1.40081	0.0000308	75.57	0.002	0.0000
FS14	Fan.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	7.260	516.24	2606.7	0.5226	1.39985	0.0000308	399.99	0.012	0.0000
FS23	LPC.Fl_O	75.58	12.667	625.29	19.26	0.0000	96.27	11.081	601.91	412.6	0.4415	1.39819	0.0000308	75.57	0.002	0.0000
FS24	VaporIN.Fl_O	75.58	12.667	625.36	19.20	0.0000	96.28	11.081	601.98	412.6	0.4415	1.39818	0.0000435	75.57	0.003	0.0000
FS25	Bleed2.Fl_O	75.58	12.667	625.36	19.20	0.0000	96.28	11.081	601.98	412.6	0.4415	1.39818	0.0000435	75.57	0.003	0.0000
FS3	HPC.Fl_O	71.91	165.364	1379.14	207.17	0.0000	10.42	149.116	1342.03	49.7	0.3928	1.35715	0.0000435	71.91	0.003	0.0000
FS36	Bleed3.Fl_O	55.73	165.364	1379.14	207.17	0.0000	8.08	155.925	1357.95	49.3	0.2953	1.35715	0.0000435	55.73	0.002	0.0000
FS4	Burner.Fl_O	57.08	161.556	2818.71	176.88	0.0242	12.10	152.620	2782.93	74.6	0.3003	1.28469	0.0000435	55.73	0.002	0.0292
FS45	HPT.Fl_O	76.04	37.752	1847.45	-1.29	0.0181	55.87	34.006	1801.00	265.4	0.4002	1.32100	0.0000435	74.69	0.003	0.0219
FS49	LPT.Fl_O	76.93	8.678	1323.57	-141.15	0.0179	208.11	7.485	1273.84	860.2	0.4724	1.34812	0.0000435	75.57	0.003	0.0217
FS5	TEGV.Fl_O	76.93	8.678	1323.64	-141.15	0.0179	208.12	7.485	1273.90	860.2	0.4724	1.34811	0.0000435	75.57	0.003	0.0217
FS8	Core_Nozz.Fl_O	76.93	8.678	1323.77	-141.15	0.0179	208.13	4.641	1123.74	613.4	1.0000	1.34810	0.0000435	75.57	0.003	0.0217
FS17	FanDuctLkg.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	7.260	516.24	2606.7	0.5226	1.39985	0.0000308	399.99	0.012	0.0000
FS171	Bleed15.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	7.055	512.03	2481.9	0.5625	1.39985	0.0000308	399.99	0.012	0.0000
FS172	FanDuct.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	7.055	512.03	2481.9	0.5625	1.39985	0.0000308	399.99	0.012	0.0000
FS173	Byp_Nozz.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	4.619	453.60	2006.9	1.0000	1.39985	0.0000308	399.99	0.012	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1073.78	1.692	0.9109	4120.393	1.1782	0.9173	-11176.3	38.42	23.46
LPC	202.88	2.451	0.8264	4120.393	1.3532	0.8467	-4189.4	2.96	2.22
HPC	96.28	13.055	0.8586	10345.054	2.2053	0.8979	-19611.7	26.28	25.48
HPT	12.10	4.279	0.9118	213.958	1.3469	0.8911	19611.7		
LPT	55.87	4.350	0.9155	90.484	1.3923	0.8986	15365.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1247.63	1.677	0.9128	4081.106	0.0636	0.8607	1.0235	0.9980	0.9905
LPC	165.08	2.727	0.8329	1.088	0.0000	1.2289	0.8404	0.9923	0.0003
HPC	87.57	12.487	0.8674	10069.262	13.4722	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.188	0.9118	1.286	4.1885	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.520	0.9223	1.018	3.5200	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3892.74	11474.9
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4724	860.21
FanDuct	0.0000	0.5625	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2928	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11359.4	9067.7	19611.7
LP_Shaft	3889.2	20750.4	15365.7

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.7812	1010.15	113.19	37.752
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.8842	1010.15	113.19	8.678
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	972.31	103.79	46.260
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1204.14	162.06	107.339
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	972.31	103.79	46.260
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1379.14	207.17	165.364
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	972.31	103.79	46.260

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	625.36	19.20	12.667
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	8.6293	1379.14	207.17	161.556
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	7.5509	1379.14	207.17	90.740
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1379.14	207.17	165.364
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1379.14	207.17	165.364
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1379.14	207.17	165.364
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	544.45	-0.17	8.745
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	544.45	-0.17	8.745
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	544.45	-0.17	8.745
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	544.45	-0.17	8.745

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2818.71	0.9995	0.0230	1.34984	0.02422

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.509	0.9810	1.0000	0.9800	613.40	1.000	1587.6	4521.3
Byp_Nozz	2.529	0.9811	1.0000	0.9800	2006.86	1.000	1023.5	15053.8

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**********************************************************************************************************************
Date:07/05/13    Time:09:22:34    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    75
Temperature Stator 1 inlet: 458.63    Stator 1 exit: 474.87    Stator 2 inlet: 494.60    Stator 2 exit: 502.86
            Stator 3 inlet: 526.46    Stator 3 exit: 534.71    Stator 4 inlet: 557.04    Stator 4 exit: 564.60
            Stator 5 inlet: 582.44    Stator 5 exit: 589.57            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.58
Fan Bypass Relative Humidity       0.24
LPC Inlet Relative Humidity        1.86
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          776.30    Fan/LPC Inlet Flow Velocity        414.64
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.63
Ambient Static Temperature     411.85    Fan/LPC Inlet Static Temperature   447.77
Additional Water at LPC Exit   0.0000162
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	439.17	6082.8	0.5942	3614.58	5.5824	776.30	26.748	1.342	75.600	2543.5	2391.4	1654.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	439.17	5.170	462.10	-19.92	0.0000	1178.32	3.458	411.85	3594.7	0.7800	1.40081	0.0000308	439.15	0.014	0.0000
FS1	Inlet.Fl_O	439.17	5.170	462.10	-19.92	0.0000	1178.32	4.118	432.98	4168.2	0.5791	1.40081	0.0000308	439.15	0.014	0.0000
FS12	Splitter.Fl_02	372.45	5.167	462.10	-19.92	0.0000	999.81	4.112	432.86	3531.8	0.5805	1.40081	0.0000308	372.44	0.011	0.0000
FS2	Splitter.Fl_01	66.72	5.167	462.10	-19.92	0.0000	179.10	4.629	447.77	830.5	0.3996	1.40081	0.0000308	66.72	0.002	0.0000
FS14	Fan.Fl_O	372.45	8.040	530.74	-3.46	0.0000	688.70	6.674	503.23	2606.7	0.5226	1.40006	0.0000308	372.44	0.011	0.0000
FS23	LPC.Fl_O	66.72	12.318	612.36	16.15	0.0000	86.49	11.115	594.68	412.6	0.3862	1.39851	0.0000308	66.72	0.002	0.0000
FS24	VaporIN.Fl_O	66.72	12.318	612.43	16.07	0.0000	86.49	11.114	594.74	412.6	0.3863	1.39851	0.0000470	66.72	0.003	0.0000
FS25	Bleed2.Fl_O	66.72	12.318	612.43	16.07	0.0000	86.49	11.114	594.74	412.6	0.3863	1.39851	0.0000470	66.72	0.003	0.0000
FS3	HPC.Fl_O	63.48	138.285	1293.34	184.91	0.0000	10.65	124.000	1256.30	49.7	0.4027	1.36228	0.0000470	63.48	0.003	0.0000
FS36	Bleed3.Fl_O	49.20	138.285	1293.34	184.91	0.0000	8.26	130.009	1272.26	49.3	0.3021	1.36228	0.0000470	49.20	0.002	0.0000
FS4	Burner.Fl_O	50.20	135.100	2543.47	159.94	0.0204	12.09	127.609	2510.33	74.6	0.2988	1.29509	0.0000470	49.20	0.002	0.0247
FS45	HPT.Fl_O	66.94	31.404	1662.23	-1.11	0.0152	56.08	28.260	1619.05	265.4	0.4004	1.33130	0.0000470	65.94	0.003	0.0185
FS49	LPT.Fl_O	67.72	7.206	1183.82	-125.98	0.0150	208.65	6.211	1138.13	860.2	0.4719	1.35873	0.0000470	66.72	0.003	0.0183
FS5	TEGV.Fl_O	67.72	7.206	1183.89	-125.98	0.0150	208.66	6.211	1138.19	860.2	0.4719	1.35873	0.0000470	66.72	0.003	0.0183
FS8	Core_Nozz.Fl_O	67.72	7.206	1184.02	-125.98	0.0150	208.67	3.841	1000.77	613.4	1.0000	1.35872	0.0000470	66.72	0.003	0.0183
FS17	FanDuctLkg.Fl_O	372.45	8.040	530.74	-3.46	0.0000	688.70	6.674	503.23	2606.7	0.5226	1.40006	0.0000308	372.44	0.011	0.0000
FS171	Bleed15.Fl_O	372.45	8.040	530.74	-3.46	0.0000	688.70	6.485	499.13	2481.9	0.5625	1.40006	0.0000308	372.44	0.011	0.0000
FS172	FanDuct.Fl_O	372.45	8.040	530.74	-3.46	0.0000	688.70	6.485	499.13	2481.9	0.5625	1.40006	0.0000308	372.44	0.011	0.0000
FS173	Byp_Nozz.Fl_O	372.45	8.040	530.74	-3.46	0.0000	688.70	4.246	442.16	2006.9	1.0000	1.40006	0.0000308	372.44	0.011	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	999.81	1.556	0.9070	3841.927	1.1486	0.9126	-8672.9	62.44	29.36
LPC	179.10	2.384	0.8662	3841.927	1.3252	0.8814	-3404.6	4.01	3.17
HPC	86.49	11.226	0.8614	10052.195	2.1118	0.8984	-15551.3	33.25	31.96
HPT	12.09	4.302	0.9079	216.586	1.3570	0.8887	15551.3		
LPT	56.08	4.358	0.9114	88.946	1.4014	0.8940	12077.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1161.68	1.543	0.9088	3805.294	0.0589	0.8607	1.0235	0.9980	0.9905
LPC	143.07	2.430	0.8207	1.015	0.0000	1.2517	0.9680	1.0554	0.0003
HPC	78.67	10.744	0.8703	9784.210	12.8566	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.210	0.9079	1.302	4.2105	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.526	0.9181	1.001	3.5256	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3594.69	10596.3

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4719	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5824	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10923.1	7477.5	15551.3
LP_Shaft	3626.3	17492.0	12077.5

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.4553	959.07	100.49	31.404
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7806	959.07	100.49	7.206
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	924.89	92.05	40.031
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1134.62	144.39	90.417
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	924.89	92.05	40.031
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1293.34	184.91	138.285
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	924.89	92.05	40.031

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	612.43	16.07	12.318
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.6180	1293.34	184.91	135.100
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.6659	1293.34	184.91	75.786
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1293.34	184.91	138.285
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1293.34	184.91	138.285
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1293.34	184.91	138.285
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	530.74	-3.46	8.040
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	530.74	-3.46	8.040
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	530.74	-3.46	8.040
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	530.74	-3.46	8.040

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2543.45	0.9995	0.0230	1.00405	0.02041

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.084	0.9813	1.0000	0.9800	613.40	1.000	1503.7	3400.3
Byp_Nozz	2.325	0.9815	1.0000	0.9800	2006.86	1.000	1010.5	13278.9

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**********************************************************************************************************************************
Date:07/05/13    Time:09:23:08    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 19/ 33/ 1/17    Run by: Philip C Jorgenson      PC:    72
Temperature Stator 1 inlet: 459.57    Stator 1 exit: 475.57    Stator 2 inlet: 495.09    Stator 2 exit: 503.39
            Stator 3 inlet: 526.53    Stator 3 exit: 534.77    Stator 4 inlet: 556.65    Stator 4 exit: 564.18
            Stator 5 inlet: 581.71    Stator 5 exit: 588.79            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.46
Fan Bypass Relative Humidity       0.25
LPC Inlet Relative Humidity        1.81
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                 0.0000500    Inlet Length                        40.00
Ambient Flow Velocity           776.30    Fan/LPC Inlet Flow Velocity        406.23
Ambient Static Pressure           3.46    Fan/LPC Inlet Static Pressure        4.65
Ambient Static Temperature      411.85    Fan/LPC Inlet Static Temperature   448.34
Additional Water at LPC Exit    0.0000168
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	434.93	5854.9	0.5947	3481.82	5.6326	776.30	26.125	1.304	72.700	2513.1	2363.2	1634.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	434.93	5.170	462.10	-19.92	0.0000	1166.96	3.458	411.85	3560.0	0.7800	1.40081	0.0000308	434.92	0.013	0.0000
FS1	Inlet.Fl_O	434.93	5.170	462.10	-19.92	0.0000	1166.96	4.146	433.81	4168.2	0.5703	1.40081	0.0000308	434.92	0.013	0.0000
FS12	Splitter.Fl_02	369.36	5.167	462.10	-19.92	0.0000	991.51	4.136	433.58	3531.8	0.5728	1.40081	0.0000308	369.35	0.011	0.0000
FS2	Splitter.Fl_01	65.57	5.167	462.10	-19.92	0.0000	176.03	4.649	448.34	830.5	0.3912	1.40081	0.0000308	65.57	0.002	0.0000
FS14	Fan.Fl_O	369.36	7.960	529.11	-3.85	0.0000	688.70	6.608	501.68	2606.7	0.5226	1.40008	0.0000308	369.35	0.011	0.0000
FS23	LPC.Fl_O	65.57	12.254	610.98	15.81	0.0000	85.35	11.092	593.87	412.6	0.3801	1.39855	0.0000308	65.57	0.002	0.0000
FS24	VaporIN.Fl_O	65.58	12.254	611.04	15.73	0.0000	85.36	11.092	593.93	412.6	0.3801	1.39854	0.0000477	65.57	0.003	0.0000
FS25	Bleed2.Fl_O	65.58	12.254	611.04	15.73	0.0000	85.36	11.092	593.93	412.6	0.3801	1.39854	0.0000477	65.57	0.003	0.0000
FS3	HPC.Fl_O	62.40	135.064	1283.78	182.44	0.0000	10.68	121.030	1246.74	49.7	0.4038	1.36287	0.0000477	62.39	0.003	0.0000
FS36	Bleed3.Fl_O	48.36	135.064	1283.78	182.44	0.0000	8.28	126.936	1262.71	49.3	0.3029	1.36287	0.0000477	48.35	0.002	0.0000
FS4	Burner.Fl_O	49.32	131.953	2513.10	158.02	0.0200	12.09	124.635	2480.26	74.6	0.2987	1.29627	0.0000477	48.35	0.002	0.0242
FS45	HPT.Fl_O	65.78	30.657	1642.24	-1.10	0.0149	56.11	27.585	1599.42	265.4	0.4004	1.33248	0.0000477	64.81	0.003	0.0182
FS49	LPT.Fl_O	66.54	7.034	1168.97	-124.33	0.0147	208.71	6.062	1123.73	860.2	0.4718	1.35988	0.0000477	65.57	0.003	0.0180
FS5	TEGV.Fl_O	66.54	7.034	1169.04	-124.33	0.0147	208.72	6.062	1123.79	860.2	0.4718	1.35988	0.0000477	65.57	0.003	0.0180
FS8	Core_Nozz.Fl_O	66.54	7.034	1169.18	-124.33	0.0147	208.73	3.749	987.77	613.4	1.0000	1.35987	0.0000477	65.57	0.003	0.0180
FS17	FanDuctLkg.Fl_O	369.36	7.960	529.11	-3.85	0.0000	688.70	6.608	501.68	2606.7	0.5226	1.40008	0.0000308	369.35	0.011	0.0000
FS171	Bleed15.Fl_O	369.36	7.960	529.11	-3.85	0.0000	688.70	6.421	497.59	2481.9	0.5625	1.40008	0.0000308	369.35	0.011	0.0000
FS172	FanDuct.Fl_O	369.36	7.960	529.11	-3.85	0.0000	688.70	6.421	497.59	2481.9	0.5625	1.40008	0.0000308	369.35	0.011	0.0000
FS173	Byp_Nozz.Fl_O	369.36	7.960	529.11	-3.85	0.0000	688.70	4.204	440.79	2006.9	1.0000	1.40008	0.0000308	369.35	0.011	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	991.51	1.541	0.9070	3810.868	1.1450	0.9125	-8395.8	67.58	30.09
LPC	176.03	2.371	0.8684	3810.868	1.3222	0.8833	-3315.3	4.29	3.38
HPC	85.36	11.022	0.8615	10020.329	2.1010	0.8982	-15091.9	34.11	32.76
HPT	12.09	4.304	0.9073	216.954	1.3579	0.8878	15091.9		
LPT	56.11	4.358	0.9107	88.762	1.4022	0.8932	11711.1		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1152.04	1.528	0.9089	3774.531	0.0583	0.8607	1.0235	0.9980	0.9905
LPC	141.07	2.398	0.8201	1.007	0.0000	1.2478	0.9813	1.0588	0.0003
HPC	77.63	10.550	0.8704	9753.193	12.7857	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.213	0.9073	1.304	4.2126	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.526	0.9175	0.998	3.5259	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3560.02	10494.2

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4718	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6326	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10876.1	7287.9	15091.9
LP_Shaft	3597.0	17099.6	11711.1

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.4132	953.42	99.09	30.657
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7672	953.42	99.09	7.034
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	919.65	90.75	39.272
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1126.88	142.43	88.396
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	919.65	90.75	39.272
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1283.78	182.44	135.064
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	919.65	90.75	39.272

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	611.04	15.73	12.254
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.4874	1283.78	182.44	131.953
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.5516	1283.78	182.44	74.012
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1283.78	182.44	135.064
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1283.78	182.44	135.064
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1283.78	182.44	135.064
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	529.11	-3.85	7.960
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	529.11	-3.85	7.960
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	529.11	-3.85	7.960
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	529.11	-3.85	7.960

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2513.07	0.9995	0.0230	0.96717	0.02000

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.034	0.9811	1.0000	0.9800	613.40	1.000	1494.4	3269.0
Byp_Nozz	2.302	0.9815	1.0000	0.9800	2006.86	1.000	1009.0	13080.1

```
*******************************************************************************************************************************
Date:07/05/13    Time:09:23:40    Model:                                         Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    69
Temperature Stator 1 inlet: 460.42    Stator 1 exit: 476.16    Stator 2 inlet: 495.46    Stator 2 exit: 503.76
            Stator 3 inlet: 526.43    Stator 3 exit: 534.64    Stator 4 inlet: 556.07    Stator 4 exit: 563.55
            Stator 5 inlet: 580.77    Stator 5 exit: 587.78             Unblocked   Percent Blockage: 0.00
```

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.36		
Fan Bypass Relative Humidity	0.26		
LPC Inlet Relative Humidity	1.77		
LPC Exit Relative Humidity	0.02		
HPC Relative Humidity	0.00		
Drop Diameter	0.0000500	Inlet Length	40.00
Ambient Flow Velocity	776.30	Fan/LPC Inlet Flow Velocity	397.98
Ambient Static Pressure	3.46	Fan/LPC Inlet Static Pressure	4.67
Ambient Static Temperature	411.85	Fan/LPC Inlet Static Temperature	448.89
Additional Water at LPC Exit	0.0000173		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	430.86	5636.4	0.5955	3356.43	5.6862	776.30	25.519	1.267	69.900	2484.3	2336.7	1615.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	430.86	5.170	462.10	-19.92	0.0000	1156.04	3.458	411.85	3526.7	0.7800	1.40081	0.0000308	430.85	0.013	0.0000
FS1	Inlet.Fl_O	430.86	5.170	462.10	-19.92	0.0000	1156.04	4.172	434.59	4168.2	0.5619	1.40081	0.0000308	430.85	0.013	0.0000
FS12	Splitter.Fl_02	366.42	5.167	462.10	-19.92	0.0000	983.64	4.158	434.24	3531.8	0.5656	1.40081	0.0000308	366.41	0.011	0.0000
FS2	Splitter.Fl_01	64.44	5.167	462.10	-19.92	0.0000	172.99	4.670	448.89	830.5	0.3830	1.40081	0.0000308	64.44	0.002	0.0000
FS14	Fan.Fl_O	366.42	7.885	527.52	-4.23	0.0000	688.70	6.546	500.18	2606.7	0.5226	1.40011	0.0000308	366.41	0.011	0.0000
FS23	LPC.Fl_O	64.44	12.172	609.42	15.44	0.0000	84.33	11.049	592.82	412.6	0.3747	1.39858	0.0000308	64.44	0.002	0.0000
FS24	VaporIN.Fl_O	64.44	12.172	609.49	15.36	0.0000	84.34	11.048	592.89	412.6	0.3747	1.39858	0.0000482	64.44	0.003	0.0000
FS25	Bleed2.Fl_O	64.44	12.172	609.49	15.36	0.0000	84.34	11.048	592.89	412.6	0.3747	1.39858	0.0000482	64.44	0.003	0.0000
FS3	HPC.Fl_O	61.32	131.932	1274.55	180.06	0.0000	10.71	118.149	1237.52	49.7	0.4049	1.36344	0.0000482	61.31	0.003	0.0000
FS36	Bleed3.Fl_O	47.52	131.932	1274.55	180.06	0.0000	8.30	123.952	1253.50	49.3	0.3036	1.36344	0.0000482	47.52	0.002	0.0000
FS4	Burner.Fl_O	48.45	128.894	2484.30	156.16	0.0196	12.09	121.744	2451.73	74.6	0.2985	1.29739	0.0000482	47.52	0.002	0.0238
FS45	HPT.Fl_O	64.62	29.926	1622.95	-1.15	0.0146	56.13	26.924	1580.48	265.4	0.4005	1.33363	0.0000482	63.68	0.003	0.0178
FS49	LPT.Fl_O	65.37	6.867	1154.72	-122.78	0.0145	208.77	5.917	1109.91	860.2	0.4718	1.36099	0.0000482	64.44	0.003	0.0176
FS5	TEGV.Fl_O	65.37	6.867	1154.79	-122.78	0.0145	208.77	5.917	1109.97	860.2	0.4718	1.36098	0.0000482	64.44	0.003	0.0176
FS8	Core_Nozz.Fl_O	65.37	6.867	1154.93	-122.78	0.0145	208.78	3.658	975.31	613.4	1.0000	1.36097	0.0000482	64.44	0.003	0.0177
FS17	FanDuctLkg.Fl_O	366.42	7.885	527.52	-4.23	0.0000	688.70	6.546	500.18	2606.7	0.5226	1.40011	0.0000308	366.41	0.011	0.0000
FS171	Bleed15.Fl_O	366.42	7.885	527.52	-4.23	0.0000	688.70	6.361	496.10	2481.9	0.5625	1.40011	0.0000308	366.41	0.011	0.0000
FS172	FanDuct.Fl_O	366.42	7.885	527.52	-4.23	0.0000	688.70	6.361	496.10	2481.9	0.5625	1.40011	0.0000308	366.41	0.011	0.0000
FS173	Byp_Nozz.Fl_O	366.42	7.885	527.52	-4.23	0.0000	688.70	4.164	439.47	2006.9	1.0000	1.40011	0.0000308	366.41	0.011	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	983.64	1.526	0.9074	3779.190	1.1416	0.9127	-8132.3	74.07	30.79
LPC	172.99	2.356	0.8699	3779.190	1.3188	0.8845	-3223.8	4.58	3.57
HPC	84.34	10.839	0.8615	9991.665	2.0912	0.8980	-14652.9	34.91	33.49
HPT	12.09	4.307	0.9067	217.306	1.3591	0.8875	14652.9		
LPT	56.13	4.358	0.9100	88.546	1.4029	0.8923	11356.1		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1142.89	1.514	0.9092	3743.156	0.0578	0.8607	1.0235	0.9980	0.9905
LPC	139.03	2.366	0.8195	0.998	0.0000	1.2442	0.9926	1.0615	0.0003
HPC	76.71	10.375	0.8704	9725.294	12.7209	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.215	0.9067	1.306	4.2155	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.526	0.9168	0.996	3.5258	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3526.73	10396.0

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4718	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6862	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10831.1	7105.3	14652.9
LP_Shaft	3567.1	16720.3	11356.1

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3714	947.85	97.71	29.926
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7540	947.85	97.71	6.867
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	914.48	89.47	38.519
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1119.37	140.53	86.423
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	914.48	89.47	38.519
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1274.55	180.06	131.932
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	914.48	89.47	38.519

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	609.49	15.36	12.172
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.3579	1274.55	180.06	128.894
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.4384	1274.55	180.06	72.284
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1274.55	180.06	131.932
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1274.55	180.06	131.932
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1274.55	180.06	131.932
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	527.52	-4.23	7.885
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	527.52	-4.23	7.885
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	527.52	-4.23	7.885
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	527.52	-4.23	7.885

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2484.27	0.9995	0.0230	0.93234	0.01962

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.986	0.9808	1.0000	0.9800	613.40	1.000	1485.5	3141.1
Byp_Nozz	2.280	0.9815	1.0000	0.9800	2006.86	1.000	1007.5	12891.3

50μm, ISA +36R

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**********************************************************************************************************************************
Date:07/05/13    Time:09:33:02    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 28/ 56/ 2/25    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 468.73    Stator 1 exit: 488.20    Stator 2 inlet: 510.80    Stator 2 exit: 518.47
            Stator 3 inlet: 548.50    Stator 3 exit: 556.94    Stator 4 inlet: 585.08    Stator 4 exit: 593.22
            Stator 5 inlet: 615.02    Stator 5 exit: 622.95            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.34
Fan Bypass Relative Humidity       0.21
LPC Inlet Relative Humidity        2.54
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          793.07    Fan/LPC Inlet Flow Velocity        493.57
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.45
Ambient Static Temperature     429.85    Fan/LPC Inlet Static Temperature   461.98
Additional Water at LPC Exit   0.0000218
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	36.00	465.50	8112.0	0.6156	4993.32	5.2959	793.07	31.925	1.687	100.000	2926.0	2747.3	1915.5

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	465.50	5.170	482.28	-15.41	0.0000	1275.97	3.458	429.85	3892.8	0.7800	1.40064	0.0000871	465.45	0.041	0.0001
FS1	Inlet.Fl_O	465.50	5.170	482.28	-15.41	0.0000	1275.97	3.838	442.88	4168.2	0.6662	1.40064	0.0000871	465.45	0.041	0.0001
FS12	Splitter.Fl_02	391.56	5.167	482.28	-15.41	0.0000	1073.84	3.865	443.82	3531.8	0.6575	1.40064	0.0000871	391.53	0.034	0.0001
FS2	Splitter.Fl_01	73.94	5.167	482.28	-15.41	0.0000	202.77	4.446	461.98	830.5	0.4683	1.40064	0.0000871	73.93	0.006	0.0001
FS14	Fan.Fl_O	391.56	8.746	568.20	5.21	0.0000	688.62	7.260	538.78	2606.7	0.5227	1.39944	0.0000871	391.53	0.034	0.0001
FS23	LPC.Fl_O	73.94	12.695	652.75	25.55	0.0000	96.02	11.116	628.54	412.6	0.4401	1.39742	0.0000871	73.93	0.006	0.0001
FS24	VaporIN.Fl_O	73.94	12.695	652.85	25.45	0.0000	96.03	11.115	628.62	412.6	0.4402	1.39742	0.0001089	73.93	0.008	0.0001
FS25	Bleed2.Fl_O	73.94	12.695	652.85	25.45	0.0000	96.03	11.115	628.62	412.6	0.4402	1.39742	0.0001089	73.93	0.008	0.0001
FS3	HPC.Fl_O	70.35	165.048	1433.33	220.97	0.0000	10.41	148.851	1395.05	49.7	0.3929	1.35405	0.0001089	70.34	0.008	0.0001
FS36	Bleed3.Fl_O	54.52	165.048	1433.33	220.97	0.0000	8.07	155.639	1411.47	49.3	0.2954	1.35405	0.0001089	54.52	0.006	0.0001
FS4	Burner.Fl_O	55.91	161.247	2926.02	188.71	0.0254	12.10	152.351	2889.25	74.6	0.3007	1.28090	0.0001089	54.52	0.006	0.0307
FS45	HPT.Fl_O	74.46	37.749	1924.71	3.74	0.0190	55.84	34.008	1876.78	265.4	0.4006	1.31719	0.0001089	73.06	0.008	0.0231
FS49	LPT.Fl_O	75.32	8.694	1382.59	-142.25	0.0188	207.88	7.501	1331.20	860.2	0.4725	1.34398	0.0001089	73.93	0.008	0.0228
FS5	TEGV.Fl_O	75.32	8.694	1382.65	-142.25	0.0188	207.89	7.501	1331.26	860.2	0.4725	1.34398	0.0001089	73.93	0.008	0.0228
FS8	Core_Nozz.Fl_O	75.32	8.694	1382.78	-142.25	0.0188	207.90	4.655	1175.87	613.4	1.0000	1.34397	0.0001089	73.93	0.008	0.0228
FS17	FanDuctLkg.Fl_O	391.56	8.746	568.20	5.21	0.0000	688.62	7.260	538.78	2606.7	0.5227	1.39944	0.0000871	391.53	0.034	0.0001
FS171	Bleed15.Fl_O	391.56	8.746	568.20	5.21	0.0000	688.62	7.055	534.39	2481.9	0.5626	1.39944	0.0000871	391.53	0.034	0.0001
FS172	FanDuct.Fl_O	391.56	8.746	568.20	5.21	0.0000	688.62	7.055	534.39	2481.9	0.5626	1.39944	0.0000871	391.53	0.034	0.0001
FS173	Byp_Nozz.Fl_O	391.56	8.746	568.20	5.21	0.0000	688.62	4.619	473.44	2006.9	1.0000	1.39944	0.0000871	391.53	0.034	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1073.84	1.693	0.9109	4120.680	1.1782	0.9173	-11420.7	38.39	23.45
LPC	202.77	2.457	0.8274	4120.680	1.3535	0.8476	-4284.9	2.96	2.22
HPC	96.03	13.001	0.8587	10334.499	2.1955	0.8978	-19957.2	26.49	25.69
HPT	12.10	4.272	0.9122	214.344	1.3425	0.8900	19957.2		
LPT	55.84	4.342	0.9168	90.571	1.3886	0.9005	15704.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1247.70	1.677	0.9128	4081.390	0.0636	0.8607	1.0235	0.9980	0.9905
LPC	165.11	2.727	0.8329	1.088	0.0000	1.2281	0.8435	0.9934	0.0003
HPC	87.33	12.435	0.8675	10058.988	13.4512	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.181	0.9122	1.288	4.1808	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.514	0.9236	1.019	3.5136	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3892.76	11474.2

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4725	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2959	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11594.4	9040.3	19957.2
LP_Shaft	3973.5	20757.7	15704.2

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.7209	1051.78	123.21	37.749
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.8651	1051.78	123.21	8.694
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1012.62	113.43	46.213
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1252.44	174.04	107.154
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1012.62	113.43	46.213
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1433.33	220.97	165.048
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1012.62	113.43	46.213

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	652.85	25.45	12.695
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	8.4422	1433.33	220.97	161.247
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	7.3871	1433.33	220.97	90.606
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1433.33	220.97	165.048
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1433.33	220.97	165.048
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1433.33	220.97	165.048
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	568.20	5.21	8.746
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	568.20	5.21	8.746
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	568.20	5.21	8.746
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	568.20	5.21	8.746

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2926.02	0.9995	0.0230	1.38703	0.02544

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.514	0.9810	1.0000	0.9800	613.40	1.000	1621.7	4530.9
Byp_Nozz	2.529	0.9811	1.0000	0.9800	2006.86	1.000	1045.6	15055.3

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**********************************************************************************************************************************
Date:07/05/13    Time:09:33:34    Model:                                    Turbofan Engine -  COMDES ON     converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    75
Temperature Stator 1 inlet: 478.71    Stator 1 exit: 495.67    Stator 2 inlet: 516.27    Stator 2 exit: 524.91
            Stator 3 inlet: 549.55    Stator 3 exit: 558.17    Stator 4 inlet: 581.47    Stator 4 exit: 589.37
            Stator 5 inlet: 607.99    Stator 5 exit: 615.44             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity        10.00
Fan Face Relative Humidity        3.82
Fan Bypass Relative Humidity      0.30
LPC Inlet Relative Humidity       2.07
LPC Exit Relative Humidity        0.03
HPC Relative Humidity             0.00
Drop Diameter                 0.0000500    Inlet Length                          40.00
Ambient Flow Velocity           793.07    Fan/LPC Inlet Flow Velocity           423.38
Ambient Static Pressure           3.46    Fan/LPC Inlet Static Pressure          4.63
Ambient Static Temperature      429.85    Fan/LPC Inlet Static Temperature     467.34
Additional Water at LPC Exit    0.0000290
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	36.00	429.86	6089.9	0.6090	3708.85	5.5854	793.07	26.696	1.344	75.600	2640.6	2483.3	1723.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	429.86	5.170	482.28	-15.41	0.0000	1178.29	3.458	429.85	3594.7	0.7800	1.40064	0.0000871	429.82	0.037	0.0001
FS1	Inlet.Fl_O	429.86	5.170	482.28	-15.41	0.0000	1178.29	4.118	451.90	4168.2	0.5792	1.40064	0.0000871	429.82	0.037	0.0001
FS12	Splitter.Fl_02	364.58	5.167	482.28	-15.41	0.0000	999.86	4.112	451.76	3531.8	0.5806	1.40064	0.0000871	364.55	0.032	0.0001
FS2	Splitter.Fl_01	65.27	5.167	482.28	-15.41	0.0000	179.01	4.629	467.34	830.5	0.3994	1.40064	0.0000871	65.27	0.006	0.0001
FS14	Fan.Fl_O	364.58	8.040	553.90	1.77	0.0000	688.65	6.674	525.21	2606.7	0.5226	1.39969	0.0000871	364.55	0.032	0.0001
FS23	LPC.Fl_O	65.27	12.327	639.13	22.27	0.0000	86.38	11.126	620.74	412.6	0.3858	1.39781	0.0000871	65.27	0.006	0.0001
FS24	VaporIN.Fl_O	65.28	12.327	639.22	22.13	0.0000	86.39	11.125	620.83	412.6	0.3858	1.39780	0.0001161	65.27	0.008	0.0001
FS25	Bleed2.Fl_O	65.28	12.327	639.22	22.13	0.0000	86.39	11.125	620.83	412.6	0.3858	1.39780	0.0001161	65.27	0.008	0.0001
FS3	HPC.Fl_O	62.11	138.015	1345.00	197.89	0.0000	10.65	123.763	1306.74	49.7	0.4030	1.35914	0.0001161	62.10	0.007	0.0001
FS36	Bleed3.Fl_O	48.14	138.015	1345.00	197.89	0.0000	8.25	129.759	1323.24	49.3	0.3024	1.35914	0.0001161	48.13	0.006	0.0001
FS4	Burner.Fl_O	49.17	134.836	2640.65	171.37	0.0214	12.09	127.373	2606.59	74.6	0.2992	1.29155	0.0001161	48.13	0.006	0.0259
FS45	HPT.Fl_O	65.54	31.391	1731.00	3.97	0.0160	56.06	28.250	1686.42	265.4	0.4008	1.32754	0.0001161	64.51	0.007	0.0195
FS49	LPT.Fl_O	66.31	7.216	1235.80	-126.37	0.0158	208.46	6.221	1188.56	860.2	0.4720	1.35495	0.0001161	65.27	0.008	0.0193
FS5	TEGV.Fl_O	66.31	7.216	1235.87	-126.37	0.0158	208.46	6.221	1188.62	860.2	0.4720	1.35494	0.0001161	65.27	0.008	0.0193
FS8	Core_Nozz.Fl_O	66.31	7.216	1236.00	-126.37	0.0158	208.47	3.851	1046.30	613.4	1.0000	1.35493	0.0001161	65.27	0.008	0.0193
FS17	FanDuctLkg.Fl_O	364.58	8.040	553.90	1.77	0.0000	688.65	6.674	525.21	2606.7	0.5226	1.39969	0.0000871	364.55	0.032	0.0001
FS171	Bleed15.Fl_O	364.58	8.040	553.90	1.77	0.0000	688.65	6.486	520.93	2481.9	0.5626	1.39969	0.0000871	364.55	0.032	0.0001
FS172	FanDuct.Fl_O	364.58	8.040	553.90	1.77	0.0000	688.65	6.486	520.93	2481.9	0.5626	1.39969	0.0000871	364.55	0.032	0.0001
FS173	Byp_Nozz.Fl_O	364.58	8.040	553.90	1.77	0.0000	688.65	4.246	461.49	2006.9	1.0000	1.39969	0.0000871	364.55	0.032	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	999.86	1.556	0.9070	3842.192	1.1485	0.9126	-8862.8	62.42	29.35
LPC	179.01	2.386	0.8662	3842.192	1.3252	0.8814	-3479.7	4.01	3.17
HPC	86.39	11.196	0.8615	10049.022	2.1041	0.8982	-15839.3	33.47	32.17
HPT	12.09	4.295	0.9089	217.095	1.3535	0.8892	15839.3		
LPT	56.06	4.351	0.9129	89.050	1.3979	0.8960	12342.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1161.74	1.543	0.9088	3805.558	0.0589	0.8607	1.0235	0.9980	0.9905
LPC	143.09	2.430	0.8208	1.015	0.0000	1.2510	0.9690	1.0554	0.0003
HPC	78.57	10.716	0.8704	9781.122	12.8375	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.204	0.9089	1.305	4.2040	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.520	0.9197	1.002	3.5200	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3594.74	10595.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5626	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5854	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11155.9	7457.0	15839.3
LP_Shaft	3704.9	17496.6	12342.4

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.4022	999.02	110.01	31.391
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7637	999.02	110.01	7.216
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	963.60	101.22	39.978
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1180.79	155.70	90.253
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	963.60	101.22	39.978
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1345.00	197.89	138.015
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	963.60	101.22	39.978

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	639.22	22.13	12.327
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.4533	1345.00	197.89	134.836
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.5218	1345.00	197.89	75.666
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1345.00	197.89	138.015
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1345.00	197.89	138.015
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1345.00	197.89	138.015
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	553.90	1.77	8.040
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	553.90	1.77	8.040
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	553.90	1.77	8.040
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	553.90	1.77	8.040

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2640.63	0.9995	0.0230	1.03024	0.02141

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.087	0.9813	1.0000	0.9800	613.40	1.000	1535.6	3405.5
Byp_Nozz	2.325	0.9815	1.0000	0.9800	2006.86	1.000	1032.4	13280.1

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Date:07/05/13 Time:09:34:07 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 19/ 33/ 1/17 Run by: Philip C Jorgenson PC: 72
Temperature Stator 1 inlet: 479.68 Stator 1 exit: 496.38 Stator 2 inlet: 516.78 Stator 2 exit: 525.46
Stator 3 inlet: 549.60 Stator 3 exit: 558.22 Stator 4 inlet: 581.05 Stator 4 exit: 588.92
Stator 5 inlet: 607.22 Stator 5 exit: 614.61 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.70		
Fan Bypass Relative Humidity	0.31		
LPC Inlet Relative Humidity	2.02		
LPC Exit Relative Humidity	0.03		
HPC Relative Humidity	0.00		
Drop Diameter	0.0000500	Inlet Length	40.00
Ambient Flow Velocity	793.07	Fan/LPC Inlet Flow Velocity	414.83
Ambient Static Pressure	3.46	Fan/LPC Inlet Static Pressure	4.65
Ambient Static Temperature	429.85	Fan/LPC Inlet Static Temperature	467.94
Additional Water at LPC Exit	0.0000300		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	36.00	425.73	5861.8	0.6094	3572.28	5.6353	793.07	26.076	1.306	72.700	2609.1	2454.2	1702.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	425.73	5.170	482.28	-15.41	0.0000	1166.96	3.458	429.85	3560.2	0.7800	1.40064	0.0000871	425.69	0.037	0.0001
FS1	Inlet.Fl_O	425.73	5.170	482.28	-15.41	0.0000	1166.96	4.146	452.76	4168.2	0.5703	1.40064	0.0000871	425.69	0.037	0.0001
FS12	Splitter.Fl_02	361.57	5.167	482.28	-15.41	0.0000	991.59	4.136	452.51	3531.8	0.5729	1.40064	0.0000871	361.54	0.031	0.0001
FS2	Splitter.Fl_01	64.16	5.167	482.28	-15.41	0.0000	175.96	4.650	467.94	830.5	0.3911	1.40064	0.0000871	64.16	0.006	0.0001
FS14	Fan.Fl_O	361.57	7.961	552.20	1.36	0.0000	688.66	6.609	523.60	2606.7	0.5226	1.39972	0.0000871	361.54	0.031	0.0001
FS23	LPC.Fl_O	64.16	12.263	637.67	21.92	0.0000	85.26	11.102	619.88	412.6	0.3797	1.39785	0.0000871	64.16	0.006	0.0001
FS24	VaporIN.Fl_O	64.16	12.263	637.77	21.77	0.0000	85.27	11.102	619.97	412.6	0.3798	1.39784	0.0001171	64.16	0.008	0.0001
FS25	Bleed2.Fl_O	64.16	12.263	637.77	21.77	0.0000	85.27	11.102	619.97	412.6	0.3798	1.39784	0.0001171	64.16	0.008	0.0001
FS3	HPC.Fl_O	61.05	134.810	1335.15	195.32	0.0000	10.68	120.807	1296.89	49.7	0.4042	1.35973	0.0001171	61.04	0.007	0.0001
FS36	Bleed3.Fl_O	47.31	134.810	1335.15	195.32	0.0000	8.28	126.701	1313.38	49.3	0.3032	1.35973	0.0001171	47.31	0.006	0.0001
FS4	Burner.Fl_O	48.31	131.706	2609.14	169.41	0.0210	12.09	124.416	2575.38	74.6	0.2990	1.29275	0.0001171	47.31	0.006	0.0254
FS45	HPT.Fl_O	64.40	30.645	1709.93	3.99	0.0157	56.08	27.576	1665.75	265.4	0.4009	1.32873	0.0001171	63.40	0.007	0.0191
FS49	LPT.Fl_O	65.16	7.043	1220.00	-124.64	0.0155	208.52	6.071	1173.22	860.2	0.4720	1.35615	0.0001171	64.16	0.008	0.0189
FS5	TEGV.Fl_O	65.16	7.043	1220.07	-124.64	0.0155	208.52	6.071	1173.28	860.2	0.4720	1.35615	0.0001171	64.16	0.008	0.0189
FS8	Core_Nozz.Fl_O	65.16	7.043	1220.21	-124.64	0.0155	208.53	3.757	1032.42	613.4	1.0000	1.35614	0.0001171	64.16	0.008	0.0189
FS17	FanDuctLkg.Fl_O	361.57	7.961	552.20	1.36	0.0000	688.66	6.609	523.60	2606.7	0.5226	1.39972	0.0000871	361.54	0.031	0.0001
FS171	Bleed15.Fl_O	361.57	7.961	552.20	1.36	0.0000	688.66	6.422	519.33	2481.9	0.5626	1.39972	0.0000871	361.54	0.031	0.0001
FS172	FanDuct.Fl_O	361.57	7.961	552.20	1.36	0.0000	688.66	6.422	519.33	2481.9	0.5626	1.39972	0.0000871	361.54	0.031	0.0001
FS173	Byp_Nozz.Fl_O	361.57	7.961	552.20	1.36	0.0000	688.66	4.205	460.08	2006.9	1.0000	1.39972	0.0000871	361.54	0.031	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	991.59	1.541	0.9070	3811.247	1.1450	0.9125	-8580.7	67.50	30.08
LPC	175.96	2.373	0.8684	3811.247	1.3222	0.8833	-3388.4	4.29	3.38
HPC	85.27	10.994	0.8615	10017.451	2.0935	0.8980	-15373.6	34.33	32.97
HPT	12.09	4.298	0.9083	217.467	1.3546	0.8888	15373.6		
LPT	56.08	4.351	0.9124	88.875	1.3989	0.8953	11969.1		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1152.13	1.528	0.9089	3774.907	0.0583	0.8607	1.0235	0.9980	0.9905
LPC	141.09	2.398	0.8201	1.007	0.0000	1.2471	0.9822	1.0589	0.0003
HPC	77.55	10.523	0.8704	9750.393	12.7668	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.206	0.9083	1.307	4.2064	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.521	0.9192	1.000	3.5206	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3560.21	10494.0

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6353	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11108.2	7268.9	15373.6
LP_Shaft	3675.1	17105.2	11969.1

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3612	993.17	108.55	30.645
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7507	993.17	108.55	7.043
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	958.17	99.87	39.223
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1172.81	153.67	88.242
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	958.17	99.87	39.223
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1335.15	195.32	134.810
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	958.17	99.87	39.223

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	637.77	21.77	12.263
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.3261	1335.15	195.32	131.706
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.4105	1335.15	195.32	73.899
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1335.15	195.32	134.810
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1335.15	195.32	134.810
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1335.15	195.32	134.810
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	552.20	1.36	7.961
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	552.20	1.36	7.961
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	552.20	1.36	7.961
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	552.20	1.36	7.961

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2609.12	0.9995	0.0230	0.99230	0.02097

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.037	0.9811	1.0000	0.9800	613.40	1.000	1526.0	3273.7
Byp_Nozz	2.302	0.9815	1.0000	0.9800	2006.86	1.000	1030.8	13082.0

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Date:07/05/13 Time:09:34:37 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 17/ 31/ 1/15 Run by: Philip C Jorgenson PC: 69
Temperature Stator 1 inlet: 480.57 Stator 1 exit: 497.00 Stator 2 inlet: 517.17 Stator 2 exit: 525.85
Stator 3 inlet: 549.50 Stator 3 exit: 558.08 Stator 4 inlet: 580.46 Stator 4 exit: 588.27
Stator 5 inlet: 606.24 Stator 5 exit: 613.56 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.60		
Fan Bypass Relative Humidity	0.33		
LPC Inlet Relative Humidity	1.98		
LPC Exit Relative Humidity	0.03		
HPC Relative Humidity	0.00		
Drop Diameter	0.0000500	Inlet Length	40.00
Ambient Flow Velocity	793.07	Fan/LPC Inlet Flow Velocity	406.39
Ambient Static Pressure	3.46	Fan/LPC Inlet Static Pressure	4.67
Ambient Static Temperature	429.85	Fan/LPC Inlet Static Temperature	468.51
Additional Water at LPC Exit	0.0000311		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	36.00	421.75	5642.9	0.6101	3442.82	5.6892	793.07	25.469	1.269	69.900	2579.2	2426.5	1682.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	421.75	5.170	482.28	-15.41	0.0000	1156.05	3.458	429.85	3526.9	0.7800	1.40064	0.0000871	421.71	0.037	0.0001
FS1	Inlet.Fl_O	421.75	5.170	482.28	-15.41	0.0000	1156.05	4.172	453.57	4168.2	0.5620	1.40064	0.0000871	421.71	0.037	0.0001
FS12	Splitter.Fl_02	358.70	5.167	482.28	-15.41	0.0000	983.72	4.158	453.21	3531.8	0.5658	1.40064	0.0000871	358.67	0.031	0.0001
FS2	Splitter.Fl_01	63.05	5.167	482.28	-15.41	0.0000	172.91	4.670	468.51	830.5	0.3829	1.40064	0.0000871	63.04	0.005	0.0001
FS14	Fan.Fl_O	358.70	7.886	550.55	0.97	0.0000	688.66	6.547	522.03	2606.7	0.5226	1.39975	0.0000871	358.67	0.031	0.0001
FS23	LPC.Fl_O	63.05	12.180	636.05	21.53	0.0000	84.24	11.058	618.79	412.6	0.3743	1.39789	0.0000871	63.04	0.005	0.0001
FS24	VaporIN.Fl_O	63.05	12.180	636.14	21.37	0.0000	84.25	11.058	618.88	412.6	0.3743	1.39789	0.0001182	63.04	0.007	0.0001
FS25	Bleed2.Fl_O	63.05	12.180	636.14	21.37	0.0000	84.25	11.058	618.88	412.6	0.3743	1.39789	0.0001182	63.04	0.007	0.0001
FS3	HPC.Fl_O	59.99	131.672	1325.58	192.84	0.0000	10.70	117.920	1287.32	49.7	0.4054	1.36031	0.0001182	59.99	0.007	0.0001
FS36	Bleed3.Fl_O	46.49	131.672	1325.58	192.84	0.0000	8.30	123.710	1303.83	49.3	0.3039	1.36031	0.0001182	46.49	0.005	0.0001
FS4	Burner.Fl_O	47.45	128.640	2579.17	167.48	0.0206	12.09	121.517	2545.70	74.6	0.2988	1.29390	0.0001182	46.49	0.005	0.0250
FS45	HPT.Fl_O	63.27	29.912	1689.91	3.94	0.0153	56.11	26.913	1646.07	265.4	0.4009	1.32988	0.0001182	62.31	0.007	0.0188
FS49	LPT.Fl_O	64.01	6.874	1205.14	-123.03	0.0152	208.58	5.925	1158.79	860.2	0.4720	1.35729	0.0001182	63.04	0.007	0.0186
FS5	TEGV.Fl_O	64.01	6.874	1205.21	-123.03	0.0152	208.59	5.925	1158.85	860.2	0.4720	1.35728	0.0001182	63.04	0.007	0.0186
FS8	Core_Nozz.Fl_O	64.01	6.874	1205.34	-123.03	0.0152	208.60	3.666	1019.37	613.4	1.0000	1.35727	0.0001182	63.04	0.007	0.0186
FS17	FanDuctLkg.Fl_O	358.70	7.886	550.55	0.97	0.0000	688.66	6.547	522.03	2606.7	0.5226	1.39975	0.0000871	358.67	0.031	0.0001
FS171	Bleed15.Fl_O	358.70	7.886	550.55	0.97	0.0000	688.66	6.362	517.77	2481.9	0.5626	1.39975	0.0000871	358.67	0.031	0.0001
FS172	FanDuct.Fl_O	358.70	7.886	550.55	0.97	0.0000	688.66	6.362	517.77	2481.9	0.5626	1.39975	0.0000871	358.67	0.031	0.0001
FS173	Byp_Nozz.Fl_O	358.70	7.886	550.55	0.97	0.0000	688.66	4.165	458.70	2006.9	1.0000	1.39975	0.0000871	358.67	0.031	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	983.72	1.526	0.9074	3779.613	1.1416	0.9127	-8311.6	73.97	30.78
LPC	172.91	2.357	0.8699	3779.613	1.3188	0.8845	-3294.8	4.57	3.57
HPC	84.25	10.810	0.8615	9988.697	2.0838	0.8979	-14925.5	35.13	33.71
HPT	12.09	4.301	0.9078	217.822	1.3557	0.8883	14925.5		
LPT	56.11	4.351	0.9117	88.658	1.3996	0.8945	11606.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1142.98	1.514	0.9092	3743.575	0.0578	0.8607	1.0235	0.9980	0.9905
LPC	139.06	2.366	0.8195	0.998	0.0000	1.2433	0.9935	1.0615	0.0003
HPC	76.62	10.348	0.8704	9722.405	12.7017	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.209	0.9078	1.309	4.2092	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.521	0.9185	0.997	3.5206	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3526.90	10395.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5626	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6892	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11062.2	7086.3	14925.5
LP_Shaft	3644.6	16725.6	11606.4

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.3203	987.39	107.11	29.912
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.7377	987.39	107.11	6.874
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	952.79	98.53	38.468
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1165.02	151.69	86.265
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	952.79	98.53	38.468
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1325.58	192.84	131.672
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	952.79	98.53	38.468

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	636.14	21.37	12.180
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	7.1992	1325.58	192.84	128.640
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	6.2994	1325.58	192.84	72.167
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1325.58	192.84	131.672
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1325.58	192.84	131.672
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1325.58	192.84	131.672
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	550.55	0.97	7.886
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	550.55	0.97	7.886
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	550.55	0.97	7.886
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	550.55	0.97	7.886

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2579.15	0.9995	0.0230	0.95634	0.02057

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.988	0.9808	1.0000	0.9800	613.40	1.000	1516.9	3145.3
Byp_Nozz	2.281	0.9815	1.0000	0.9800	2006.86	1.000	1029.2	12893.3

100μm, ISA +18R

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**********************************************************************************************************************************
Date:07/05/13    Time:09:45:29    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 27/ 41/ 1/25    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 449.01    Stator 1 exit: 467.64    Stator 2 inlet: 489.24    Stator 2 exit: 496.53
            Stator 3 inlet: 525.31    Stator 3 exit: 533.35    Stator 4 inlet: 560.32    Stator 4 exit: 568.08
            Stator 5 inlet: 588.96    Stator 5 exit: 596.53            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.11
Fan Bypass Relative Humidity       0.16
LPC Inlet Relative Humidity        2.31
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          776.30    Fan/LPC Inlet Flow Velocity        483.45
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.45
Ambient Static Temperature     411.85    Fan/LPC Inlet Static Temperature   442.61
Additional Water at LPC Exit   0.0000058
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	475.58	8100.2	0.5999	4859.48	5.2927	776.30	31.986	1.684	100.000	2818.7	2645.7	1838.6

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	475.58	5.170	462.10	-19.92	0.0000	1276.02	3.458	411.85	3892.8	0.7800	1.40081	0.0000308	475.57	0.015	0.0000
FS1	Inlet.Fl_O	475.58	5.170	462.10	-19.92	0.0000	1276.02	3.838	424.34	4168.2	0.6662	1.40081	0.0000308	475.57	0.015	0.0000
FS12	Splitter.Fl_02	400.01	5.167	462.10	-19.92	0.0000	1073.78	3.865	425.25	3531.8	0.6574	1.40081	0.0000308	399.99	0.012	0.0000
FS2	Splitter.Fl_01	75.58	5.167	462.10	-19.92	0.0000	202.88	4.445	442.61	830.5	0.4686	1.40081	0.0000308	75.57	0.002	0.0000
FS14	Fan.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	7.260	516.24	2606.7	0.5226	1.39985	0.0000308	399.99	0.012	0.0000
FS23	LPC.Fl_O	75.58	12.667	625.30	19.26	0.0000	96.28	11.081	601.92	412.6	0.4415	1.39819	0.0000308	75.57	0.002	0.0000
FS24	VaporIN.Fl_O	75.58	12.667	625.36	19.24	0.0000	96.28	11.081	601.98	412.6	0.4415	1.39818	0.0000366	75.57	0.003	0.0000
FS25	Bleed2.Fl_O	75.58	12.667	625.36	19.24	0.0000	96.28	11.081	601.98	412.6	0.4415	1.39818	0.0000366	75.57	0.003	0.0000
FS3	HPC.Fl_O	71.91	165.367	1379.15	207.21	0.0000	10.42	149.119	1342.04	49.7	0.3928	1.35715	0.0000366	71.91	0.003	0.0000
FS36	Bleed3.Fl_O	55.73	165.367	1379.15	207.21	0.0000	8.08	155.928	1357.96	49.3	0.2953	1.35715	0.0000366	55.73	0.002	0.0000
FS4	Burner.Fl_O	57.08	161.558	2818.73	176.92	0.0242	12.10	152.623	2782.95	74.6	0.3003	1.28469	0.0000366	55.73	0.002	0.0292
FS45	HPT.Fl_O	76.04	37.753	1847.47	-1.25	0.0181	55.87	34.007	1801.01	265.4	0.4002	1.32100	0.0000366	74.69	0.003	0.0219
FS49	LPT.Fl_O	76.93	8.678	1323.58	-141.11	0.0179	208.11	7.485	1273.85	860.2	0.4724	1.34812	0.0000366	75.57	0.003	0.0217
FS5	TEGV.Fl_O	76.93	8.678	1323.65	-141.11	0.0179	208.12	7.485	1273.91	860.2	0.4724	1.34811	0.0000366	75.57	0.003	0.0217
FS8	Core_Nozz.Fl_O	76.93	8.678	1323.78	-141.11	0.0179	208.13	4.641	1123.74	613.4	1.0000	1.34810	0.0000366	75.57	0.003	0.0217
FS17	FanDuctLkg.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	7.260	516.24	2606.7	0.5226	1.39985	0.0000308	399.99	0.012	0.0000
FS171	Bleed15.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	7.055	512.03	2481.9	0.5625	1.39985	0.0000308	399.99	0.012	0.0000
FS172	FanDuct.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	7.055	512.03	2481.9	0.5625	1.39985	0.0000308	399.99	0.012	0.0000
FS173	Byp_Nozz.Fl_O	400.01	8.745	544.45	-0.17	0.0000	688.68	4.619	453.60	2006.9	1.0000	1.39985	0.0000308	399.99	0.012	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1073.78	1.692	0.9109	4120.398	1.1782	0.9173	-11176.3	38.42	23.46
LPC	202.88	2.451	0.8264	4120.398	1.3532	0.8467	-4189.7	2.96	2.22
HPC	96.28	13.055	0.8586	10345.089	2.2054	0.8979	-19611.9	26.28	25.48
HPT	12.10	4.279	0.9118	213.958	1.3469	0.8911	19611.9		
LPT	55.87	4.351	0.9155	90.484	1.3923	0.8986	15365.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1247.63	1.677	0.9128	4081.111	0.0636	0.8607	1.0235	0.9980	0.9905
LPC	165.08	2.727	0.8329	1.088	0.0000	1.2290	0.8404	0.9922	0.0003
HPC	87.57	12.487	0.8674	10069.296	13.4723	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.188	0.9118	1.286	4.1885	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.520	0.9223	1.018	3.5200	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3892.75	11475.0

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4724	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2927	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11359.4	9067.7	19611.9
LP_Shaft	3889.2	20750.7	15365.9

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.7812	1010.15	113.23	37.753
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.8843	1010.15	113.23	8.678
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	972.32	103.83	46.261
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1204.15	162.10	107.341
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	972.32	103.83	46.261
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1379.15	207.21	165.367
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	972.32	103.83	46.261

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	625.36	19.24	12.667
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	8.6294	1379.15	207.21	161.558
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	7.5509	1379.15	207.21	90.742
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1379.15	207.21	165.367
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1379.15	207.21	165.367
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1379.15	207.21	165.367
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	544.45	-0.17	8.745
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	544.45	-0.17	8.745
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	544.45	-0.17	8.745
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	544.45	-0.17	8.745

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2818.73	0.9995	0.0230	1.34986	0.02422

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.509	0.9810	1.0000	0.9800	613.40	1.000	1587.6	4521.3
Byp_Nozz	2.529	0.9811	1.0000	0.9800	2006.86	1.000	1023.5	15053.9

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********************************************************************************************************************
Date:07/05/13    Time:09:46:02    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    75
Temperature Stator 1 inlet: 458.63    Stator 1 exit: 474.88    Stator 2 inlet: 494.60    Stator 2 exit: 502.86
            Stator 3 inlet: 526.47    Stator 3 exit: 534.71    Stator 4 inlet: 557.05    Stator 4 exit: 564.61
            Stator 5 inlet: 582.45    Stator 5 exit: 589.57             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.58
Fan Bypass Relative Humidity       0.24
LPC Inlet Relative Humidity        1.86
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                  0.0001000    Inlet Length                          40.00
Ambient Flow Velocity             776.30    Fan/LPC Inlet Flow Velocity          414.64
Ambient Static Pressure             3.46    Fan/LPC Inlet Static Pressure          4.63
Ambient Static Temperature        411.85    Fan/LPC Inlet Static Temperature     447.77
Additional Water at LPC Exit     0.0000060
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	18.00	439.17	6082.8	0.5942	3614.67	5.5824	776.30	26.748	1.342	75.600	2543.5	2391.4	1654.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	439.17	5.170	462.10	-19.92	0.0000	1178.32	3.458	411.85	3594.7	0.7800	1.40081	0.0000308	439.15	0.014	0.0000
FS1	Inlet.Fl_O	439.17	5.170	462.10	-19.92	0.0000	1178.32	4.118	432.98	4168.2	0.5791	1.40081	0.0000308	439.15	0.014	0.0000
FS12	Splitter.Fl_02	372.45	5.167	462.10	-19.92	0.0000	999.81	4.112	432.86	3531.8	0.5805	1.40081	0.0000308	372.44	0.011	0.0000
FS2	Splitter.Fl_01	66.72	5.167	462.10	-19.92	0.0000	179.10	4.629	447.77	830.5	0.3996	1.40081	0.0000308	66.72	0.002	0.0000
FS14	Fan.Fl_O	372.45	8.040	530.74	-3.46	0.0000	688.70	6.674	503.23	2606.7	0.5226	1.40006	0.0000308	372.44	0.011	0.0000
FS23	LPC.Fl_O	66.72	12.317	612.36	16.15	0.0000	86.49	11.114	594.67	412.6	0.3863	1.39851	0.0000308	66.72	0.002	0.0000
FS24	VaporIN.Fl_O	66.72	12.317	612.42	16.13	0.0000	86.50	11.114	594.73	412.6	0.3863	1.39851	0.0000368	66.72	0.002	0.0000
FS25	Bleed2.Fl_O	66.72	12.317	612.42	16.13	0.0000	86.50	11.114	594.73	412.6	0.3863	1.39851	0.0000368	66.72	0.002	0.0000
FS3	HPC.Fl_O	63.48	138.286	1293.35	184.97	0.0000	10.65	124.002	1256.31	49.7	0.4027	1.36228	0.0000368	63.48	0.002	0.0000
FS36	Bleed3.Fl_O	49.20	138.286	1293.35	184.97	0.0000	8.26	130.011	1272.27	49.3	0.3021	1.36228	0.0000368	49.20	0.002	0.0000
FS4	Burner.Fl_O	50.20	135.101	2543.52	159.99	0.0204	12.09	127.611	2510.39	74.6	0.2988	1.29509	0.0000368	49.20	0.002	0.0247
FS45	HPT.Fl_O	66.94	31.404	1662.26	-1.05	0.0152	56.08	28.260	1619.08	265.4	0.4004	1.33130	0.0000368	65.94	0.002	0.0185
FS49	LPT.Fl_O	67.72	7.206	1183.84	-125.93	0.0150	208.65	6.211	1138.15	860.2	0.4719	1.35873	0.0000368	66.72	0.002	0.0183
FS5	TEGV.Fl_O	67.72	7.206	1183.91	-125.93	0.0150	208.66	6.211	1138.21	860.2	0.4719	1.35873	0.0000368	66.72	0.002	0.0183
FS8	Core_Nozz.Fl_O	67.72	7.206	1184.04	-125.93	0.0150	208.67	3.842	1000.78	613.4	1.0000	1.35872	0.0000368	66.72	0.002	0.0183
FS17	FanDuctLkg.Fl_O	372.45	8.040	530.74	-3.46	0.0000	688.70	6.674	503.23	2606.7	0.5226	1.40006	0.0000308	372.44	0.011	0.0000
FS171	Bleed15.Fl_O	372.45	8.040	530.74	-3.46	0.0000	688.70	6.485	499.13	2481.9	0.5625	1.40006	0.0000308	372.44	0.011	0.0000
FS172	FanDuct.Fl_O	372.45	8.040	530.74	-3.46	0.0000	688.70	6.485	499.13	2481.9	0.5625	1.40006	0.0000308	372.44	0.011	0.0000
FS173	Byp_Nozz.Fl_O	372.45	8.040	530.74	-3.46	0.0000	688.70	4.246	442.16	2006.9	1.0000	1.40006	0.0000308	372.44	0.011	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	999.81	1.556	0.9070	3841.924	1.1486	0.9126	-8672.8	62.44	29.36
LPC	179.10	2.384	0.8661	3841.924	1.3252	0.8813	-3404.7	4.01	3.17
HPC	86.50	11.227	0.8614	10052.335	2.1119	0.8984	-15551.5	33.25	31.96
HPT	12.09	4.302	0.9079	216.585	1.3570	0.8887	15551.5		
LPT	56.08	4.358	0.9114	88.945	1.4014	0.8940	12077.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1161.68	1.543	0.9088	3805.291	0.0589	0.8607	1.0235	0.9980	0.9905
LPC	143.07	2.430	0.8207	1.015	0.0000	1.2519	0.9679	1.0553	0.0003
HPC	78.67	10.745	0.8703	9784.346	12.8567	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.210	0.9079	1.302	4.2105	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.526	0.9181	1.001	3.5256	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3594.69	10596.3
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4719	860.21
FanDuct	0.0000	0.5625	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5824	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10923.1	7477.5	15551.5
LP_Shaft	3626.3	17492.2	12077.5

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2543.50	0.9995	0.0230	1.00407	0.02041

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.084	0.9813	1.0000	0.9800	613.40	1.000	1503.7	3400.3
Byp_Nozz	2.325	0.9815	1.0000	0.9800	2006.86	1.000	1010.5	13278.8

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.4552	959.07	100.55	31.404
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7806	959.07	100.55	7.206
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	924.89	92.11	40.030
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1134.62	144.45	90.418
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	924.89	92.11	40.030
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1293.35	184.97	138.286
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	924.89	92.11	40.030

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	612.42	16.13	12.317
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.6179	1293.35	184.97	135.101
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.6659	1293.35	184.97	75.787
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1293.35	184.97	138.286
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1293.35	184.97	138.286
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1293.35	184.97	138.286
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	530.74	-3.46	8.040
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	530.74	-3.46	8.040
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	530.74	-3.46	8.040
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	530.74	-3.46	8.040

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**********************************************************************************************************************************
Date:07/05/13    Time:09:46:35    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    72
Temperature Stator 1 inlet: 459.57    Stator 1 exit: 475.56    Stator 2 inlet: 495.09    Stator 2 exit: 503.39
            Stator 3 inlet: 526.52    Stator 3 exit: 534.76    Stator 4 inlet: 556.65    Stator 4 exit: 564.18
            Stator 5 inlet: 581.71    Stator 5 exit: 588.79            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.46
Fan Bypass Relative Humidity       0.25
LPC Inlet Relative Humidity        1.81
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          776.30    Fan/LPC Inlet Flow Velocity        406.24
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.65
Ambient Static Temperature     411.85    Fan/LPC Inlet Static Temperature   448.34
Additional Water at LPC Exit   0.0000060

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.780   35000.0    18.00    434.93     5854.8    0.5947    3481.75    5.6325    776.30    26.125     1.304       72.700      2513.1   2363.2   1634.8


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht      FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O          434.93     5.170    462.10    -19.92   0.0000   1166.95     3.458    411.85    3560.0  0.7800   1.40081   0.0000308   434.92    0.013    0.0000
FS1   Inlet.Fl_O            434.93     5.170    462.10    -19.92   0.0000   1166.95     4.146    433.81    4168.2  0.5703   1.40081   0.0000308   434.92    0.013    0.0000
FS12  Splitter.Fl_02        369.35     5.167    462.10    -19.92   0.0000    991.50     4.136    433.58    3531.8  0.5728   1.40081   0.0000308   369.34    0.011    0.0000
FS2   Splitter.Fl_01         65.58     5.167    462.10    -19.92   0.0000    176.03     4.649    448.34     830.5  0.3912   1.40081   0.0000308    65.57    0.002    0.0000
FS14  Fan.Fl_O              369.35     7.960    529.10     -3.85   0.0000    688.70     6.608    501.68    2606.7  0.5226   1.40008   0.0000308   369.34    0.011    0.0000
FS23  LPC.Fl_O               65.58    12.254    610.98     15.81   0.0000     85.35    11.092    593.87     412.6  0.3801   1.39855   0.0000308    65.57    0.002    0.0000
FS24  VaporIN.Fl_O           65.58    12.254    611.03     15.79   0.0000     85.36    11.092    593.92     412.6  0.3801   1.39854   0.0000368    65.57    0.002    0.0000
FS25  Bleed2.Fl_O            65.58    12.254    611.03     15.79   0.0000     85.36    11.092    593.92     412.6  0.3801   1.39854   0.0000368    65.57    0.002    0.0000
FS3   HPC.Fl_O               62.40   135.065   1283.76    182.50   0.0000     10.68   121.032   1246.72      49.7  0.4038   1.36287   0.0000368    62.39    0.002    0.0000
FS36  Bleed3.Fl_O            48.36   135.065   1283.76    182.50   0.0000      8.28   126.938   1262.69      49.3  0.3029   1.36287   0.0000368    48.35    0.002    0.0000
FS4   Burner.Fl_O            49.32   131.955   2513.06    158.08   0.0200     12.09   124.637   2480.22      74.6  0.2987   1.29627   0.0000368    48.35    0.002    0.0242
FS45  HPT.Fl_O               65.78    30.657   1642.20     -1.04   0.0149     56.11    27.585   1599.39     265.4  0.4004   1.33249   0.0000368    64.81    0.002    0.0182
FS49  LPT.Fl_O               66.54     7.034   1168.95   -124.27   0.0147    208.71     6.062   1123.70     860.2  0.4718   1.35988   0.0000368    65.57    0.002    0.0180
FS5   TEGV.Fl_O              66.54     7.034   1169.02   -124.27   0.0147    208.72     6.062   1123.77     860.2  0.4718   1.35988   0.0000368    65.57    0.002    0.0180
FS8   Core_Nozz.Fl_O         66.54     7.034   1169.15   -124.27   0.0147    208.73     3.749    987.74     613.4  1.0000   1.35987   0.0000368    65.57    0.002    0.0180
FS17  FanDuctLkg.Fl_O       369.35     7.960    529.10     -3.85   0.0000    688.70     6.608    501.68    2606.7  0.5226   1.40008   0.0000308   369.34    0.011    0.0000
FS171 Bleed15.Fl_O          369.35     7.960    529.10     -3.85   0.0000    688.70     6.421    497.59    2481.9  0.5625   1.40008   0.0000308   369.34    0.011    0.0000
FS172 FanDuct.Fl_O          369.35     7.960    529.10     -3.85   0.0000    688.70     6.421    497.59    2481.9  0.5625   1.40008   0.0000308   369.34    0.011    0.0000
FS173 Byp_Nozz.Fl_O         369.35     7.960    529.10     -3.85   0.0000    688.70     4.204    440.79    2006.9  1.0000   1.40008   0.0000308   369.34    0.011    0.0000

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff         Nc        TR    efPoly        pwr       SMN      SMW
Fan       991.50   1.541    0.9070   3810.842    1.1450    0.9125    -8395.6     67.58    30.09
LPC       176.03   2.372    0.8684   3810.842    1.3222    0.8833    -3315.4      4.29     3.38
HPC        85.36  11.022    0.8615  10020.330    2.1010    0.8982   -15091.7     34.11    32.76
HPT        12.09   4.304    0.9073    216.954    1.3579    0.8878    15091.7
LPT        56.11   4.358    0.9107     88.762    1.4022    0.8932    11710.9

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan       1152.03   1.528   0.9089   3774.506    0.0583      0.8607    1.0235    0.9980    0.9905
LPC        141.07   2.398   0.8201      1.007    0.0000      1.2479    0.9813    1.0589    0.0003
HPC         77.63  10.550   0.8704   9753.195   12.7857      1.0995    1.0494    0.9898    0.9733
HPT          0.96   4.213   0.9073      1.304    4.2126     12.6299    0.9723    1.0000    0.0003
LPT          0.86   3.526   0.9175      0.998    3.5259     65.2590    0.7521    0.9926    0.0005
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===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3560.01	10494.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4718	860.21
FanDuct	0.0000	0.5625	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6325	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10876.0	7287.9	15091.7
LP_Shaft	3597.0	17099.5	11710.9

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.4132	953.40	99.14	30.657
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7672	953.40	99.14	7.034
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	919.64	90.81	39.273
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1126.86	142.49	88.397
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	919.64	90.81	39.273
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1283.76	182.50	135.065
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	919.64	90.81	39.273

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	611.03	15.79	12.254
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.4875	1283.76	182.50	131.955
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.5517	1283.76	182.50	74.013
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1283.76	182.50	135.065
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1283.76	182.50	135.065
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1283.76	182.50	135.065
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	529.10	-3.85	7.960
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	529.10	-3.85	7.960
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	529.10	-3.85	7.960
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	529.10	-3.85	7.960

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2513.03	0.9995	0.0230	0.96715	0.02000

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.034	0.9811	1.0000	0.9800	613.40	1.000	1494.4	3269.0
Byp_Nozz	2.302	0.9815	1.0000	0.9800	2006.86	1.000	1009.0	13079.9

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**********************************************************************************************************************************
Date:07/05/13    Time:09:47:07    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    69
Temperature Stator 1 inlet: 460.42    Stator 1 exit: 476.16    Stator 2 inlet: 495.46    Stator 2 exit: 503.76
            Stator 3 inlet: 526.43    Stator 3 exit: 534.63    Stator 4 inlet: 556.07    Stator 4 exit: 563.55
            Stator 5 inlet: 580.77    Stator 5 exit: 587.78            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.36
Fan Bypass Relative Humidity       0.26
LPC Inlet Relative Humidity        1.77
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          776.30    Fan/LPC Inlet Flow Velocity        397.99
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.67
Ambient Static Temperature     411.85    Fan/LPC Inlet Static Temperature   448.89
Additional Water at LPC Exit 0.0000060

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W          Fn      TSFC      Wfuel       BPR      VTAS      OPR       EPR       PowerSet      T4      T41      T49
 0.780   35000.0    18.00    430.86      5636.2    0.5955    3356.39    5.6861    776.30   25.519     1.267       69.900      2484.3   2336.7   1615.7


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht     FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair    WH2O  H2O frac
FS0   Ambient.Fl_O          430.86     5.170    462.10    -19.92  0.0000   1156.04     3.458    411.85    3526.7  0.7800   1.40081   0.0000308    430.85   0.013    0.0000
FS1   Inlet.Fl_O            430.86     5.170    462.10    -19.92  0.0000   1156.04     4.172    434.59    4168.2  0.5619   1.40081   0.0000308    430.85   0.013    0.0000
FS12  Splitter.Fl_02        366.42     5.167    462.10    -19.92  0.0000    983.63     4.158    434.25    3531.8  0.5656   1.40081   0.0000308    366.41   0.011    0.0000
FS2   Splitter.Fl_01         64.44     5.167    462.10    -19.92  0.0000    172.99     4.670    448.89     830.5  0.3831   1.40081   0.0000308     64.44   0.002    0.0000
FS14  Fan.Fl_O              366.42     7.885    527.52     -4.23  0.0000    688.70     6.546    500.18    2606.7  0.5226   1.40011   0.0000308    366.41   0.011    0.0000
FS23  LPC.Fl_O               64.44    12.172    609.41     15.44  0.0000     84.34    11.048    592.82     412.6  0.3747   1.39858   0.0000308     64.44   0.002    0.0000
FS24  VaporIN.Fl_O           64.44    12.172    609.47     15.42  0.0000     84.34    11.048    592.87     412.6  0.3747   1.39858   0.0000369     64.44   0.002    0.0000
FS25  Bleed2.Fl_O            64.44    12.172    609.47     15.42  0.0000     84.34    11.048    592.87     412.6  0.3747   1.39858   0.0000369     64.44   0.002    0.0000
FS3   HPC.Fl_O               61.32   131.930   1274.52    180.12  0.0000     10.71   118.147   1237.50      49.7  0.4050   1.36345   0.0000369     61.31   0.002    0.0000
FS36  Bleed3.Fl_O            47.52   131.930   1274.52    180.12  0.0000      8.30   123.951   1253.47      49.3  0.3036   1.36345   0.0000369     47.52   0.002    0.0000
FS4   Burner.Fl_O            48.45   128.892   2484.26    156.22  0.0196     12.09   121.743   2451.70      74.6  0.2985   1.29739   0.0000369     47.52   0.002    0.0238
FS45  HPT.Fl_O               64.62    29.925   1622.92     -1.09  0.0146     56.14    26.923   1580.45     265.4  0.4005   1.33363   0.0000369     63.69   0.002    0.0178
FS49  LPT.Fl_O               65.37     6.866   1154.70   -122.72  0.0145    208.77     5.917   1109.88     860.2  0.4718   1.36099   0.0000369     64.44   0.002    0.0176
FS5   TEGV.Fl_O              65.37     6.866   1154.77   -122.72  0.0145    208.78     5.917   1109.95     860.2  0.4718   1.36098   0.0000369     64.44   0.002    0.0176
FS8   Core_Nozz.Fl_O         65.37     6.866   1154.90   -122.72  0.0145    208.79     3.658    975.28     613.4  1.0000   1.36097   0.0000369     64.44   0.002    0.0176
FS17  FanDuctLkg.Fl_O        366.42     7.885    527.52     -4.23  0.0000    688.70     6.546    500.18    2606.7  0.5226   1.40011   0.0000308    366.41   0.011    0.0000
FS171 Bleed15.Fl_O           366.42     7.885    527.52     -4.23  0.0000    688.70     6.361    496.10    2481.9  0.5625   1.40011   0.0000308    366.41   0.011    0.0000
FS172 FanDuct.Fl_O           366.42     7.885    527.52     -4.23  0.0000    688.70     6.361    496.10    2481.9  0.5625   1.40011   0.0000308    366.41   0.011    0.0000
FS173 Byp_Nozz.Fl_O          366.42     7.885    527.52     -4.23  0.0000    688.70     4.164    439.47    2006.9  1.0000   1.40011   0.0000308    366.41   0.011    0.0000

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR      eff        Nc       TR   efPoly       pwr       SMN       SMW
Fan       983.63   1.526   0.9074  3779.174   1.1416   0.9127   -8132.2     74.07     30.79
LPC       172.99   2.355   0.8699  3779.174   1.3188   0.8845   -3223.7      4.58      3.57
HPC        84.34  10.839   0.8615  9991.705   2.0912   0.8980  -14652.7     34.90     33.49
HPT        12.09   4.307   0.9067   217.305   1.3591   0.8875   14652.7
LPT        56.14   4.358   0.9100    88.546   1.4029   0.8923   11355.9

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan       1142.89   1.514   0.9092   3743.140    0.0578      0.8607    1.0235    0.9980    0.9905
LPC        139.03   2.366   0.8195      0.998    0.0000      1.2442    0.9925    1.0615    0.0003
HPC         76.71  10.376   0.8704   9725.333   12.7210      1.0995    1.0494    0.9898    0.9733
HPT          0.96   4.215   0.9067      1.306    4.2155     12.6299    0.9723    1.0000    0.0003
LPT          0.86   3.526   0.9168      0.996    3.5258     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3526.73	10396.0

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4718	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6861	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10831.0	7105.3	14652.7
LP_Shaft	3567.1	16720.1	11355.9

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3715	947.83	97.77	29.925
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7540	947.83	97.77	6.866
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	914.45	89.53	38.519
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1119.35	140.59	86.422
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	914.45	89.53	38.519
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1274.52	180.12	131.930
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	914.45	89.53	38.519

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	609.47	15.42	12.172
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.3580	1274.52	180.12	128.892
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.4384	1274.52	180.12	72.283
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1274.52	180.12	131.930
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1274.52	180.12	131.930
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1274.52	180.12	131.930
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	527.52	-4.23	7.885
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	527.52	-4.23	7.885
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	527.52	-4.23	7.885
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	527.52	-4.23	7.885

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2484.24	0.9995	0.0230	0.93233	0.01962

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.986	0.9808	1.0000	0.9800	613.40	1.000	1485.5	3141.0
Byp_Nozz	2.280	0.9815	1.0000	0.9800	2006.86	1.000	1007.5	12891.2

100µm, ISA +36R

```
**********************************************************************************************************************************
Date:07/05/13    Time:09:57:39    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 24/ 52/ 2/21    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 468.73    Stator 1 exit: 488.20    Stator 2 inlet: 510.79    Stator 2 exit: 518.46
            Stator 3 inlet: 548.49    Stator 3 exit: 556.93    Stator 4 inlet: 585.07    Stator 4 exit: 593.21
            Stator 5 inlet: 615.01    Stator 5 exit: 622.94            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.34
Fan Bypass Relative Humidity       0.21
LPC Inlet Relative Humidity        2.54
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          793.07    Fan/LPC Inlet Flow Velocity        493.59
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.45
Ambient Static Temperature     429.85    Fan/LPC Inlet Static Temperature   461.97
Additional Water at LPC Exit   0.0000034
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	36.00	465.50	8111.9	0.6156	4993.37	5.2957	793.07	31.926	1.687	100.000	2926.0	2747.3	1915.5

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	465.50	5.170	482.28	-15.41	0.0000	1275.98	3.458	429.85	3892.8	0.7800	1.40064	0.0000871	465.46	0.041	0.0001
FS1	Inlet.Fl_O	465.50	5.170	482.28	-15.41	0.0000	1275.98	3.838	442.88	4168.2	0.6662	1.40064	0.0000871	465.46	0.041	0.0001
FS12	Splitter.Fl_02	391.56	5.167	482.28	-15.41	0.0000	1073.84	3.865	443.82	3531.8	0.6575	1.40064	0.0000871	391.53	0.034	0.0001
FS2	Splitter.Fl_01	73.94	5.167	482.28	-15.41	0.0000	202.77	4.446	461.97	830.5	0.4683	1.40064	0.0000871	73.93	0.006	0.0001
FS14	Fan.Fl_O	391.56	8.746	568.20	5.21	0.0000	688.62	7.260	538.78	2606.7	0.5227	1.39944	0.0000871	391.53	0.034	0.0001
FS23	LPC.Fl_O	73.94	12.694	652.73	25.55	0.0000	96.03	11.114	628.51	412.6	0.4402	1.39742	0.0000871	73.93	0.006	0.0001
FS24	VaporIN.Fl_O	73.94	12.694	652.81	25.55	0.0000	96.03	11.114	628.57	412.6	0.4402	1.39742	0.0000905	73.93	0.007	0.0001
FS25	Bleed2.Fl_O	73.94	12.694	652.81	25.55	0.0000	96.03	11.114	628.57	412.6	0.4402	1.39742	0.0000905	73.93	0.007	0.0001
FS3	HPC.Fl_O	70.35	165.050	1433.29	221.06	0.0000	10.41	148.853	1395.01	49.7	0.3929	1.35406	0.0000905	70.35	0.006	0.0001
FS36	Bleed3.Fl_O	54.52	165.050	1433.29	221.06	0.0000	8.07	155.641	1411.43	49.3	0.2954	1.35406	0.0000905	54.52	0.005	0.0001
FS4	Burner.Fl_O	55.91	161.249	2926.01	188.80	0.0254	12.10	152.353	2889.24	74.6	0.3007	1.28091	0.0000905	54.52	0.005	0.0306
FS45	HPT.Fl_O	74.46	37.749	1924.69	3.83	0.0190	55.84	34.008	1876.75	265.4	0.4006	1.31720	0.0000905	73.07	0.007	0.0231
FS49	LPT.Fl_O	75.33	8.694	1382.56	-142.15	0.0188	207.89	7.501	1331.17	860.2	0.4725	1.34398	0.0000905	73.93	0.007	0.0228
FS5	TEGV.Fl_O	75.33	8.694	1382.63	-142.15	0.0188	207.89	7.501	1331.24	860.2	0.4725	1.34398	0.0000905	73.93	0.007	0.0228
FS8	Core_Nozz.Fl_O	75.33	8.694	1382.75	-142.15	0.0188	207.90	4.655	1175.84	613.4	1.0000	1.34397	0.0000905	73.93	0.007	0.0228
FS17	FanDuctLkg.Fl_O	391.56	8.746	568.20	5.21	0.0000	688.62	7.260	538.78	2606.7	0.5227	1.39944	0.0000871	391.53	0.034	0.0001
FS171	Bleed15.Fl_O	391.56	8.746	568.20	5.21	0.0000	688.62	7.055	534.39	2481.9	0.5626	1.39944	0.0000871	391.53	0.034	0.0001
FS172	FanDuct.Fl_O	391.56	8.746	568.20	5.21	0.0000	688.62	7.055	534.39	2481.9	0.5626	1.39944	0.0000871	391.53	0.034	0.0001
FS173	Byp_Nozz.Fl_O	391.56	8.746	568.20	5.21	0.0000	688.62	4.619	473.44	2006.9	1.0000	1.39944	0.0000871	391.53	0.034	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1073.84	1.693	0.9109	4120.682	1.1782	0.9173	-11420.7	38.39	23.45
LPC	202.77	2.457	0.8274	4120.682	1.3534	0.8476	-4284.5	2.96	2.22
HPC	96.03	13.002	0.8587	10334.793	2.1956	0.8978	-19957.3	26.49	25.69
HPT	12.10	4.272	0.9122	214.343	1.3425	0.8900	19957.3		
LPT	55.84	4.342	0.9168	90.571	1.3886	0.9005	15704.1		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1247.70	1.677	0.9128	4081.391	0.0636	0.8607	1.0235	0.9980	0.9905
LPC	165.11	2.727	0.8329	1.088	0.0000	1.2281	0.8433	0.9934	0.0003
HPC	87.34	12.437	0.8675	10059.274	13.4517	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.181	0.9122	1.288	4.1809	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.514	0.9236	1.019	3.5137	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3892.78	11474.3
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4725	860.21
FanDuct	0.0000	0.5626	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2957	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11594.4	9040.4	19957.3
LP_Shaft	3973.5	20757.6	15704.1

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.7210	1051.74	123.30	37.749
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.8651	1051.74	123.30	8.694
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1012.58	113.53	46.212
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1252.40	174.14	107.155
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1012.58	113.53	46.212
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1433.29	221.06	165.050
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1012.58	113.53	46.212

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	652.81	25.55	12.694
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	8.4423	1433.29	221.06	161.249
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	7.3872	1433.29	221.06	90.607
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1433.29	221.06	165.050
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1433.29	221.06	165.050
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1433.29	221.06	165.050
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	568.20	5.21	8.746
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	568.20	5.21	8.746
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	568.20	5.21	8.746
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	568.20	5.21	8.746

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2926.01	0.9995	0.0230	1.38705	0.02544

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.514	0.9810	1.0000	0.9800	613.40	1.000	1621.7	4530.9
Byp_Nozz	2.529	0.9811	1.0000	0.9800	2006.86	1.000	1045.6	15055.3

```
**********************************************************************************************************************************
Date:07/05/13    Time:09:58:11    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    75
Temperature Stator 1 inlet: 478.71    Stator 1 exit: 495.67    Stator 2 inlet: 516.27    Stator 2 exit: 524.91
            Stator 3 inlet: 549.54    Stator 3 exit: 558.17    Stator 4 inlet: 581.47    Stator 4 exit: 589.37
            Stator 5 inlet: 607.99    Stator 5 exit: 615.44            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.82
Fan Bypass Relative Humidity       0.30
LPC Inlet Relative Humidity        2.07
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          793.07    Fan/LPC Inlet Flow Velocity        423.40
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.63
Ambient Static Temperature     429.85    Fan/LPC Inlet Static Temperature   467.34
Additional Water at LPC Exit 0.0000042

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS      OPR       EPR       PowerSet      T4      T41      T49
 0.780   35000.0    36.00    429.86     6089.7    0.6090    3708.81    5.5851    793.07   26.696     1.344       75.600      2640.6   2483.3   1723.1


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht     FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair    WH2O  H2O frac
FS0   Ambient.Fl_O          429.86     5.170    482.28    -15.41  0.0000   1178.29     3.458    429.85    3594.8  0.7800   1.40064   0.0000871    429.82   0.037    0.0001
FS1   Inlet.Fl_O            429.86     5.170    482.28    -15.41  0.0000   1178.29     4.118    451.90    4168.2  0.5792   1.40064   0.0000871    429.82   0.037    0.0001
FS12  Splitter.Fl_02        364.58     5.167    482.28    -15.41  0.0000    999.86     4.112    451.76    3531.8  0.5806   1.40064   0.0000871    364.55   0.032    0.0001
FS2   Splitter.Fl_01         65.28     5.167    482.28    -15.41  0.0000    179.02     4.629    467.34     830.5  0.3994   1.40064   0.0000871     65.27   0.006    0.0001
FS14  Fan.Fl_O              364.58     8.040    553.90      1.77  0.0000    688.65     6.674    525.21    2606.7  0.5226   1.39969   0.0000871    364.55   0.032    0.0001
FS23  LPC.Fl_O               65.28    12.326    639.11     22.27  0.0000     86.39    11.124    620.72     412.6  0.3858   1.39781   0.0000871     65.27   0.006    0.0001
FS24  VaporIN.Fl_O           65.28    12.326    639.18     22.26  0.0000     86.40    11.124    620.78     412.6  0.3858   1.39781   0.0000913     65.27   0.006    0.0001
FS25  Bleed2.Fl_O            65.28    12.326    639.18     22.26  0.0000     86.40    11.124    620.78     412.6  0.3858   1.39781   0.0000913     65.27   0.006    0.0001
FS3   HPC.Fl_O               62.11   138.014   1344.96    198.01  0.0000     10.65   123.763   1306.69      49.7  0.4030   1.35915   0.0000913     62.11   0.006    0.0001
FS36  Bleed3.Fl_O            48.14   138.014   1344.96    198.01  0.0000      8.25   129.759   1323.19      49.3  0.3023   1.35915   0.0000913     48.13   0.004    0.0001
FS4   Burner.Fl_O            49.17   134.836   2640.61    171.50  0.0214     12.09   127.372   2606.55      74.6  0.2992   1.29155   0.0000913     48.13   0.004    0.0259
FS45  HPT.Fl_O               65.54    31.391   1730.96      4.10  0.0160     56.06    28.250   1686.39     265.4  0.4008   1.32754   0.0000913     64.51   0.006    0.0195
FS49  LPT.Fl_O               66.31     7.215   1235.77   -126.23  0.0158    208.46     6.221   1188.52     860.2  0.4721   1.35496   0.0000913     65.27   0.006    0.0193
FS5   TEGV.Fl_O              66.31     7.215   1235.83   -126.23  0.0158    208.47     6.221   1188.58     860.2  0.4721   1.35495   0.0000913     65.27   0.006    0.0193
FS8   Core_Nozz.Fl_O         66.31     7.215   1235.97   -126.23  0.0158    208.48     3.851   1046.26     613.4  1.0000   1.35494   0.0000913     65.27   0.006    0.0193
FS17  FanDuctLkg.Fl_O       364.58     8.040    553.90      1.77  0.0000    688.65     6.674    525.21    2606.7  0.5226   1.39969   0.0000871    364.55   0.032    0.0001
FS171 Bleed15.Fl_O          364.58     8.040    553.90      1.77  0.0000    688.65     6.486    520.93    2481.9  0.5626   1.39969   0.0000871    364.55   0.032    0.0001
FS172 FanDuct.Fl_O          364.58     8.040    553.90      1.77  0.0000    688.65     6.486    520.93    2481.9  0.5626   1.39969   0.0000871    364.55   0.032    0.0001
FS173 Byp_Nozz.Fl_O         364.58     8.040    553.90      1.77  0.0000    688.65     4.246    461.49    2006.9  1.0000   1.39969   0.0000871    364.55   0.032    0.0001

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff        Nc        TR    efPoly       pwr       SMN       SMW
Fan       999.86   1.556    0.9070  3842.188    1.1485    0.9126   -8862.7     62.42     29.35
LPC       179.02   2.385    0.8662  3842.188    1.3252    0.8814   -3479.5      4.01      3.17
HPC        86.40  11.197    0.8615 10049.149    2.1042    0.8982  -15839.0     33.46     32.17
HPT        12.09   4.295    0.9089   217.092    1.3535    0.8892   15839.0
LPT        56.06   4.351    0.9129    89.051    1.3979    0.8960   12342.2

TURBOMACHINERY MAP DATA
            WcMap    PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan       1161.74    1.543   0.9088   3805.553    0.0589      0.8607    1.0235    0.9980    0.9905
LPC        143.09    2.430   0.8208      1.015    0.0000      1.2510    0.9689    1.0554    0.0003
HPC         78.58   10.717   0.8704   9781.245   12.8379      1.0995    1.0494    0.9898    0.9733
HPT          0.96    4.204   0.9089      1.305    4.2040     12.6299    0.9723    1.0000    0.0003
LPT          0.86    3.520   0.9197      1.002    3.5201     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3594.76	10595.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4721	860.21
FanDuct	0.0000	0.5626	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5851	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11155.7	7457.0	15839.0
LP_Shaft	3704.9	17496.3	12342.2

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.4022	998.97	110.14	31.391
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7637	998.97	110.14	7.215
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	963.55	101.35	39.977
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1180.75	155.83	90.253
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	963.55	101.35	39.977
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1344.96	198.01	138.014
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	963.55	101.35	39.977

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	639.18	22.26	12.326
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.4534	1344.96	198.01	134.836
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.5219	1344.96	198.01	75.665
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1344.96	198.01	138.014
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1344.96	198.01	138.014
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1344.96	198.01	138.014
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	553.90	1.77	8.040
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	553.90	1.77	8.040
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	553.90	1.77	8.040
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	553.90	1.77	8.040

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2640.59	0.9995	0.0230	1.03023	0.02140

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.087	0.9813	1.0000	0.9800	613.40	1.000	1535.6	3405.4
Byp_Nozz	2.325	0.9815	1.0000	0.9800	2006.86	1.000	1032.4	13280.1

****

Date:07/05/13 Time:09:58:42 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0

Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 17/ 31/ 1/15 Run by: Philip C Jorgenson PC: 72

Temperature Stator 1 inlet: 479.68 Stator 1 exit: 496.38 Stator 2 inlet: 516.78 Stator 2 exit: 525.45

Stator 3 inlet: 549.60 Stator 3 exit: 558.21 Stator 4 inlet: 581.05 Stator 4 exit: 588.92

Stator 5 inlet: 607.22 Stator 5 exit: 614.61 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.70		
Fan Bypass Relative Humidity	0.31		
LPC Inlet Relative Humidity	2.02		
LPC Exit Relative Humidity	0.03		
HPC Relative Humidity	0.00		
Drop Diameter	0.0001000	Inlet Length	40.00
Ambient Flow Velocity	793.07	Fan/LPC Inlet Flow Velocity	414.85
Ambient Static Pressure	3.46	Fan/LPC Inlet Static Pressure	4.65
Ambient Static Temperature	429.85	Fan/LPC Inlet Static Temperature	467.94
Additional Water at LPC Exit	0.0000044		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	35000.0	36.00	425.73	5861.5	0.6094	3572.18	5.6350	793.07	26.077	1.306	72.700	2609.1	2454.1	1702.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	425.73	5.170	482.28	-15.41	0.0000	1166.96	3.458	429.85	3560.2	0.7800	1.40064	0.0000871	425.69	0.037	0.0001
FS1	Inlet.Fl_O	425.73	5.170	482.28	-15.41	0.0000	1166.96	4.146	452.76	4168.2	0.5703	1.40064	0.0000871	425.69	0.037	0.0001
FS12	Splitter.Fl_02	361.56	5.167	482.28	-15.41	0.0000	991.58	4.136	452.51	3531.8	0.5729	1.40064	0.0000871	361.53	0.031	0.0001
FS2	Splitter.Fl_01	64.16	5.167	482.28	-15.41	0.0000	175.97	4.650	467.94	830.5	0.3911	1.40064	0.0000871	64.16	0.006	0.0001
FS14	Fan.Fl_O	361.56	7.961	552.20	1.36	0.0000	688.66	6.609	523.59	2606.7	0.5226	1.39972	0.0000871	361.53	0.031	0.0001
FS23	LPC.Fl_O	64.16	12.262	637.67	21.92	0.0000	85.26	11.102	619.87	412.6	0.3797	1.39785	0.0000871	64.16	0.006	0.0001
FS24	VaporIN.Fl_O	64.16	12.262	637.73	21.91	0.0000	85.27	11.102	619.94	412.6	0.3798	1.39785	0.0000915	64.16	0.006	0.0001
FS25	Bleed2.Fl_O	64.16	12.262	637.73	21.91	0.0000	85.27	11.102	619.94	412.6	0.3798	1.39785	0.0000915	64.16	0.006	0.0001
FS3	HPC.Fl_O	61.05	134.813	1335.11	195.46	0.0000	10.68	120.809	1296.84	49.7	0.4042	1.35974	0.0000915	61.05	0.006	0.0001
FS36	Bleed3.Fl_O	47.32	134.813	1335.11	195.46	0.0000	8.28	126.704	1313.33	49.3	0.3032	1.35974	0.0000915	47.31	0.004	0.0001
FS4	Burner.Fl_O	48.31	131.708	2609.08	169.53	0.0210	12.09	124.418	2575.32	74.6	0.2990	1.29275	0.0000915	47.31	0.004	0.0254
FS45	HPT.Fl_O	64.41	30.645	1709.88	4.13	0.0156	56.08	27.576	1665.70	265.4	0.4008	1.32874	0.0000915	63.41	0.006	0.0191
FS49	LPT.Fl_O	65.16	7.043	1219.96	-124.50	0.0155	208.52	6.071	1173.17	860.2	0.4720	1.35616	0.0000915	64.16	0.006	0.0189
FS5	TEGV.Fl_O	65.16	7.043	1220.02	-124.50	0.0155	208.52	6.071	1173.24	860.2	0.4720	1.35615	0.0000915	64.16	0.006	0.0189
FS8	Core_Nozz.Fl_O	65.16	7.043	1220.16	-124.50	0.0155	208.53	3.757	1032.37	613.4	1.0000	1.35614	0.0000915	64.16	0.006	0.0189
FS17	FanDuctLkg.Fl_O	361.56	7.961	552.20	1.36	0.0000	688.66	6.609	523.59	2606.7	0.5226	1.39972	0.0000871	361.53	0.031	0.0001
FS171	Bleed15.Fl_O	361.56	7.961	552.20	1.36	0.0000	688.66	6.422	519.33	2481.9	0.5626	1.39972	0.0000871	361.53	0.031	0.0001
FS172	FanDuct.Fl_O	361.56	7.961	552.20	1.36	0.0000	688.66	6.422	519.33	2481.9	0.5626	1.39972	0.0000871	361.53	0.031	0.0001
FS173	Byp_Nozz.Fl_O	361.56	7.961	552.20	1.36	0.0000	688.66	4.205	460.07	2006.9	1.0000	1.39972	0.0000871	361.53	0.031	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	991.58	1.541	0.9070	3811.212	1.1450	0.9125	-8580.4	67.51	30.08
LPC	175.97	2.373	0.8684	3811.212	1.3222	0.8833	-3388.5	4.29	3.38
HPC	85.27	10.994	0.8615	10017.491	2.0935	0.8980	-15373.2	34.33	32.96
HPT	12.09	4.298	0.9083	217.465	1.3546	0.8888	15373.2		
LPT	56.08	4.351	0.9124	88.876	1.3989	0.8953	11968.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1152.12	1.528	0.9089	3774.872	0.0583	0.8607	1.0235	0.9980	0.9905
LPC	141.09	2.398	0.8201	1.007	0.0000	1.2471	0.9822	1.0589	0.0003
HPC	77.55	10.523	0.8704	9750.431	12.7670	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.206	0.9083	1.307	4.2065	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.521	0.9192	1.000	3.5206	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3560.20	10494.0
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5626	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6350	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11107.9	7268.9	15373.2
LP_Shaft	3675.1	17104.9	11968.8

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.3612	993.13	108.68	30.645
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.7507	993.13	108.68	7.043
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	958.13	100.00	39.223
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1172.77	153.80	88.243
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	958.13	100.00	39.223
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1335.11	195.46	134.813
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	958.13	100.00	39.223

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	637.73	21.91	12.262
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	7.3263	1335.11	195.46	131.708
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	6.4106	1335.11	195.46	73.900
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1335.11	195.46	134.813
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1335.11	195.46	134.813
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1335.11	195.46	134.813
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	552.20	1.36	7.961
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	552.20	1.36	7.961
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	552.20	1.36	7.961
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	552.20	1.36	7.961

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2609.06	0.9995	0.0230	0.99227	0.02097

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.037	0.9811	1.0000	0.9800	613.40	1.000	1526.0	3273.7
Byp_Nozz	2.302	0.9815	1.0000	0.9800	2006.86	1.000	1030.8	13081.8

```
**********************************************************************************************************************************
Date:07/05/13    Time:09:59:12    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 17/ 31/ 1/15    Run by: Philip C Jorgenson      PC:    69
Temperature Stator 1 inlet: 480.57    Stator 1 exit: 497.00    Stator 2 inlet: 517.17    Stator 2 exit: 525.84
            Stator 3 inlet: 549.50    Stator 3 exit: 558.08    Stator 4 inlet: 580.45    Stator 4 exit: 588.27
            Stator 5 inlet: 606.24    Stator 5 exit: 613.56            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.60
Fan Bypass Relative Humidity       0.33
LPC Inlet Relative Humidity        1.98
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          793.07    Fan/LPC Inlet Flow Velocity        406.41
Ambient Static Pressure          3.46    Fan/LPC Inlet Static Pressure        4.67
Ambient Static Temperature     429.85    Fan/LPC Inlet Static Temperature   468.51
Additional Water at LPC Exit  0.0000045

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS      OPR       EPR       PowerSet      T4      T41      T49
 0.780   35000.0    36.00    421.75     5642.7    0.6101    3442.73    5.6888    793.07   25.470     1.269       69.900      2579.1   2426.4   1682.3


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht     FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair    WH2O  H2O frac
FS0   Ambient.Fl_O          421.75     5.170    482.28    -15.41  0.0000   1156.05     3.458    429.85    3526.9  0.7800   1.40064   0.0000871    421.71   0.037    0.0001
FS1   Inlet.Fl_O            421.75     5.170    482.28    -15.41  0.0000   1156.05     4.172    453.57    4168.2  0.5620   1.40064   0.0000871    421.71   0.037    0.0001
FS12  Splitter.Fl_02        358.69     5.167    482.28    -15.41  0.0000    983.71     4.158    453.21    3531.8  0.5657   1.40064   0.0000871    358.66   0.031    0.0001
FS2   Splitter.Fl_01         63.05     5.167    482.28    -15.41  0.0000    172.92     4.670    468.51     830.5  0.3829   1.40064   0.0000871     63.05   0.005    0.0001
FS14  Fan.Fl_O              358.69     7.886    550.55      0.97  0.0000    688.66     6.547    522.03    2606.7  0.5226   1.39975   0.0000871    358.66   0.031    0.0001
FS23  LPC.Fl_O               63.05    12.180    636.04     21.52  0.0000     84.25    11.058    618.78     412.6  0.3743   1.39789   0.0000871     63.05   0.005    0.0001
FS24  VaporIN.Fl_O           63.05    12.180    636.11     21.51  0.0000     84.25    11.058    618.84     412.6  0.3743   1.39789   0.0000916     63.05   0.006    0.0001
FS25  Bleed2.Fl_O            63.05    12.180    636.11     21.51  0.0000     84.25    11.058    618.84     412.6  0.3743   1.39789   0.0000916     63.05   0.006    0.0001
FS3   HPC.Fl_O               59.99   131.676   1325.53    192.98  0.0000     10.70   117.924   1287.27      49.7  0.4053   1.36031   0.0000916     59.99   0.005    0.0001
FS36  Bleed3.Fl_O            46.50   131.676   1325.53    192.98  0.0000      8.30   123.714   1303.78      49.3  0.3039   1.36031   0.0000916     46.49   0.004    0.0001
FS4   Burner.Fl_O            47.45   128.643   2579.11    167.61  0.0206     12.09   121.520   2545.64      74.6  0.2988   1.29390   0.0000916     46.49   0.004    0.0249
FS45  HPT.Fl_O               63.27    29.913   1689.85      4.09  0.0153     56.11    26.914   1646.02     265.4  0.4009   1.32989   0.0000916     62.31   0.006    0.0187
FS49  LPT.Fl_O               64.01     6.874   1205.09   -122.88  0.0152    208.58     5.926   1158.74     860.2  0.4719   1.35729   0.0000916     63.05   0.006    0.0185
FS5   TEGV.Fl_O              64.01     6.874   1205.16   -122.88  0.0152    208.58     5.926   1158.81     860.2  0.4719   1.35729   0.0000916     63.05   0.006    0.0185
FS8   Core_Nozz.Fl_O         64.01     6.874   1205.29   -122.88  0.0152    208.60     3.666   1019.33     613.4  1.0000   1.35728   0.0000916     63.05   0.006    0.0185
FS17  FanDuctLkg.Fl_O       358.69     7.886    550.55      0.97  0.0000    688.66     6.547    522.03    2606.7  0.5226   1.39975   0.0000871    358.66   0.031    0.0001
FS171 Bleed15.Fl_O          358.69     7.886    550.55      0.97  0.0000    688.66     6.362    517.77    2481.9  0.5626   1.39975   0.0000871    358.66   0.031    0.0001
FS172 FanDuct.Fl_O          358.69     7.886    550.55      0.97  0.0000    688.66     6.362    517.77    2481.9  0.5626   1.39975   0.0000871    358.66   0.031    0.0001
FS173 Byp_Nozz.Fl_O         358.69     7.886    550.55      0.97  0.0000    688.66     4.165    458.70    2006.9  1.0000   1.39975   0.0000871    358.66   0.031    0.0001

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff        Nc       TR   efPoly       pwr       SMN       SMW
Fan       983.71   1.526    0.9074  3779.583   1.1416   0.9127   -8311.3     73.97     30.78
LPC       172.92   2.357    0.8699  3779.583   1.3188   0.8845   -3294.8      4.57      3.57
HPC        84.25  10.811    0.8615  9988.774   2.0838   0.8979  -14925.1     35.13     33.71
HPT        12.09   4.301    0.9078   217.819   1.3557   0.8883   14925.1
LPT        56.11   4.351    0.9117    88.659   1.3996   0.8945   11606.1

TURBOMACHINERY MAP DATA
             WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan       1142.97   1.514   0.9092   3743.545    0.0578      0.8607    1.0235    0.9980    0.9905
LPC        139.06   2.366   0.8195      0.998    0.0000      1.2435    0.9934    1.0615    0.0003
HPC         76.63  10.349   0.8704   9722.480   12.7019      1.0995    1.0494    0.9898    0.9733
HPT          0.96   4.209   0.9078      1.309    4.2092     12.6299    0.9723    1.0000    0.0003
LPT          0.86   3.521   0.9185      0.997    3.5206     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3526.91	10395.8

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4719	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.6888	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11061.9	7086.3	14925.1
LP_Shaft	3644.6	16725.3	11606.1

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3203	987.34	107.24	29.913
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7377	987.34	107.24	6.874
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	952.75	98.67	38.469
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1164.97	151.82	86.267
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	952.75	98.67	38.469
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1325.53	192.98	131.676
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	952.75	98.67	38.469

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	636.11	21.51	12.180
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.1993	1325.53	192.98	128.643
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.2996	1325.53	192.98	72.169
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1325.53	192.98	131.676
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1325.53	192.98	131.676
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1325.53	192.98	131.676
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	550.55	0.97	7.886
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	550.55	0.97	7.886
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	550.55	0.97	7.886
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	550.55	0.97	7.886

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2579.09	0.9995	0.0230	0.95632	0.02057

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.988	0.9808	1.0000	0.9800	613.40	1.000	1516.9	3145.3
Byp_Nozz	2.281	0.9815	1.0000	0.9800	2006.86	1.000	1029.2	12893.2

Appendix H: Compressor code analysis for the altitude cruise conditions at 35000 feet

5µm, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 100%     07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 3.054   EfDer =  0.986    SH =  0.255636E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     75.348    3889.766       5.167     462.090       1.000       1.000       0.980
  W Kg/sec =  34.249  Wdry =  75.329  WH2O = 0.019  lbm/sec   H2O =   0.111g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     202.318    4121.124       1.381       0.248      53.357      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 166900.094   59116.141       1.404     831.557     592.278     619.754       1.046

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   481.70    -0.17   481.70     0.47     0.83   741.91
 MEAN    17.06     0.00    -0.02   481.70    -0.17   481.70     0.47     0.73
 HUB     12.51     0.00    -0.02   481.70    -0.17   481.70     0.47     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.48    50.47     5.01   700.28   850.09     4.45   443.44   454.16    18.42
 MEAN    50.25    47.20     3.05   579.10   753.38     4.45   443.44   454.16    18.42
 HUB     41.41    38.62     2.79   424.65   642.26     4.45   443.44   454.16    18.42

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   723.96   356.60   630.05  1044.52     0.69     7.29     6.52    16.04
 MEAN    18.04   768.55   413.44   647.87  1039.05     0.74     7.43     6.80    12.53
 HUB     15.00   906.40   579.08   697.30  1025.44     0.88     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    700.28   717.68   343.68     0.69  7360.08     0.92     0.90
 MEAN   612.23   677.68   198.78     0.65  7459.70     0.92     0.90      0.90     1.22
 HUB    509.17   700.80    69.91     0.68  8688.28     0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.79     1.31     4.95   502.26     1.09   460.12   481.68    12.29
 MEAN     6.82     1.32     4.76   502.80     1.09   455.32   482.78    14.86
 HUB      7.12     1.38     4.31   509.51     1.10   443.46   490.20    24.15

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.51    28.61    24.20     4.41     0.93     0.27     1.80
 MEAN    32.54    17.06    12.70     4.36     0.91     0.23     2.22
 HUB     39.71    -5.73    -9.30     3.57     0.91     0.07     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.986       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   829.2605   412.6401   719.3060  1032.4968     0.8032    -0.1044     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.8881     4.5251   449.5829   485.4478    19.3377    29.8414    35.4000     5.5587

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   673.3131   164.7129   652.8554  1053.8829     0.6389     0.2358     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.8199     5.1986   468.4207   482.3842   554.9116     0.0405     0.3647
```

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
18.0829	674.3389	0.0000	674.3389	1053.7159	0.6400	0.2622	1.3089

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.1447	468.3194	482.7632	0.0000	0.0600	0.0695	0.2118

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8288	6.7549	1.3073	504.8534	42.7661	236.5705	1.8339

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
266067.813	0.543	1132.918	860243.063	0.437683E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.757 EfDer = 0.991 SH = 0.706270E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
75.348	3889.766	6.755	504.852	1.000	1.000	0.980

W Kg/sec = 34.249 Wdry = 75.295 WH2O = 0.053 lbm/sec H2O = 0.352g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
161.770	3942.748	1.381	0.249	53.371	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
145565.922	59105.691	1.247	590.487	473.709	468.502	0.989

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	591.63	-0.20	591.63	0.56	0.86	707.04
MEAN	18.08	0.00	-0.02	591.63	-0.20	591.63	0.56	0.80	
HUB	15.21	0.00	-0.02	591.63	-0.20	591.63	0.56	0.74	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.71	46.36	3.35	697.56	914.82	5.49	476.76	483.40	13.13
MEAN	46.06	42.30	3.76	613.66	852.55	5.49	476.76	483.40	13.13
HUB	41.12	37.84	3.28	516.30	785.36	5.49	476.76	483.40	13.13

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	644.19	279.31	580.49	1091.58	0.59	2.33	2.04	9.02
MEAN	18.01	663.79	303.53	590.32	1087.94	0.61	2.40	2.13	7.35
HUB	15.22	724.72	404.83	601.11	1084.66	0.67	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	693.15	712.90	413.84	0.65	5707.71	0.92	0.91		
MEAN	611.34	665.75	307.81	0.61	5470.30	0.92	0.91	0.91	1.38
HUB	516.74	611.43	111.91	0.56	6165.86	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.23	1.22	6.52	535.95	1.06	502.65	498.86	5.90
MEAN	8.16	1.21	6.37	534.66	1.06	499.29	498.54	6.56
HUB	8.35	1.24	6.22	538.45	1.07	496.29	501.03	7.20

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.70	35.49	31.50	3.99	0.93	0.33	1.40
MEAN	27.21	27.54	23.50	4.04	0.92	0.33	1.63
HUB	33.96	10.55	6.50	4.05	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.991	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	758.9691	304.3850	695.2581	1077.8656	0.7041	-0.2306	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2291	5.9338	490.1376	500.8957	9.0032	23.6439	30.6000	6.9561

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	653.4849	138.5434	638.6299	1090.9382	0.5990	0.0344	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.1731	6.4320	502.0902	499.1576	491.5697	0.0397	0.2293

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	694.0917	0.0000	694.0917	1086.1399	0.6390	0.1103	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.1870	497.7062	499.9218	0.0000	0.0600	0.0699	-0.0958

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8316	8.1164	1.2016	536.3504	31.4985	277.4934	2.1511

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
196334.297	0.409	835.993	777662.125	0.865633E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.173 EfDer = 0.993 SH = 0.109747E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
75.348	3889.766	8.116	536.349	1.000	1.000	0.980

W Kg/sec = 34.249 Wdry = 75.266 WH2O = 0.083 lbm/sec H2O = 0.637g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
138.770	3825.228	1.380	0.249	53.384	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
125123.148	59096.594	1.342	545.479	406.477	424.468	1.044

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	550.50	-0.19	550.50	0.50	0.80	669.95
MEAN	17.74	0.00	-0.02	550.50	-0.19	550.50	0.50	0.74	
HUB	15.05	0.00	-0.02	550.50	-0.19	550.50	0.50	0.68	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.07	46.36	4.71	681.27	876.04	6.86	512.06	499.06	6.23
MEAN	47.57	43.40	4.17	602.13	815.99	6.86	512.06	499.06	6.23
HUB	42.87	38.84	4.03	510.87	751.15	6.86	512.06	499.06	6.23

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	614.49	282.80	545.55	1127.70	0.54	2.26	1.98	8.75
MEAN	17.51	632.09	304.67	553.82	1124.31	0.56	2.34	2.07	6.78
HUB	14.85	689.61	398.39	562.88	1121.22	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	672.44	670.41	389.65	0.59	5606.01	0.92	0.91		
MEAN	594.25	624.96	289.59	0.56	5337.01	0.92	0.91	0.91	1.41
HUB	504.08	572.72	105.68	0.51	5918.99	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.75	1.20	7.99	566.85	1.06	536.59	512.47	3.40
MEAN	9.66	1.19	7.82	565.38	1.05	533.37	512.08	3.71
HUB	9.84	1.21	7.65	568.55	1.06	530.44	513.95	4.00

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	27.40	35.54	31.50	4.04	0.93	0.35	1.40
MEAN	28.82	27.60	23.50	4.10	0.92	0.35	1.62
HUB	35.29	10.63	6.50	4.13	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.993	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	711.3518	306.6650	641.8551	1116.8772	0.6369	-0.2001	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.7323	7.4326	526.3967	513.7166	4.5715	25.5375	31.5000	5.9625

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.3924   618.6938   134.9639   603.7936  1127.3052     0.5488     0.0499     2.3726

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.6876     7.9151   536.2670   512.5826   451.3937     0.0331     0.2626

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   634.8366     0.0000   634.8366  1125.5708     0.5640     0.1567     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.7930   534.6465   512.9003     0.0000     0.0600     0.0560    -0.0133

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8520     9.6433     1.1881   566.9176    30.5771   262.7361     2.0367

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 190909.109       0.422     812.892  735414.750   0.134832E-02

Melt Ratio at Stator LE, Throat, TE
0.30543E-01 0.49493E-01 0.13065E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 4.790   EfDer =  0.996    SH =  0.164100E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     75.348    3889.766       9.643     566.913       1.000       1.000       0.980
 W Kg/sec =  34.249  Wdry =  75.225  WH2O = 0.124  lbm/sec   H2O =   1.096g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    120.079    3720.674       1.379       0.250      53.402      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 108702.531   59083.941       1.459     513.330     351.861     395.845       1.125

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   508.21    -0.18   508.21     0.45     0.73   625.33
 MEAN    16.97     0.00    -0.02   508.21    -0.18   508.21     0.45     0.68
 HUB     14.32     0.00    -0.02   508.21    -0.18   508.21     0.45     0.62

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.15    46.36     5.79   653.77   828.20     8.43   546.26   512.48     3.55
 MEAN    48.59    43.80     4.79   576.06   768.33     8.43   546.26   512.48     3.55
 HUB     43.74    37.84     5.90   486.09   703.37     8.43   546.26   512.48     3.55

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     18.88   578.44   279.10   506.65  1160.84      0.50     2.16     1.89     8.34
 MEAN    16.57   592.43   294.04   514.31  1157.30      0.51     2.24     1.97     6.35
 HUB     13.89   642.69   374.11   522.57  1154.01      0.56     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    640.87   622.56   361.78     0.54  5272.75      0.92     0.91
 MEAN   562.59   580.20   268.56     0.50  4876.27      0.92     0.91     0.91     1.43
 HUB    471.49   531.57    97.38     0.46  5198.96      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     11.36     1.18     9.61   595.53     1.05   568.77   523.77     2.15
 MEAN    11.22     1.16     9.41   593.38     1.05   565.31   523.12     2.33
 HUB     11.33     1.18     9.21   595.13     1.05   562.10   524.19     2.51

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.85    35.53    31.50     4.03     0.93     0.37     1.40
 MEAN    29.76    27.57    23.50     4.07     0.92     0.36     1.62
 HUB     35.60    10.56     6.50     4.06     0.92     0.38     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.996       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   644.6517   295.6886   572.8386  1153.2836     0.5590    -0.1336     2.1803
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Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
11.2856	9.1547	561.4514	524.0618	2.5687	27.3019	32.4000	5.0981

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	567.4380	127.2598	552.9836	1160.9316	0.4888	0.0896	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	11.2530	9.5778	568.9234	523.3543	432.2457	0.0272	0.2924

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	562.7682	0.0000	562.7682	1161.3058	0.4846	0.1973	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.5753	569.3198	523.3430	0.0000	0.0600	0.0454	0.0883

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8677	11.2185	1.1633	594.6301	27.7658	262.8693	2.0377

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
173699.969	0.423	739.616	720748.500	0.181332E-02

Melt Ratio at Stator LE, Throat, TE
0.58038E+00 0.66267E+00 0.88312E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 5.398 EfDer = 0.998 SH = 0.199789E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
75.348	3889.766	11.218	594.615	1.000	1.000	0.980

W Kg/sec = 34.249 Wdry = 75.198 WH2O = 0.151 lbm/sec H2O = 1.517g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
105.712	3632.940	1.378	0.250	53.413	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
95608.430	59075.629	1.645	509.668	309.852	384.739	1.242

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	450.21	-0.16	450.21	0.38	0.66	580.79
MEAN	15.91	0.00	-0.02	450.21	-0.16	450.21	0.38	0.60	
HUB	13.07	0.00	-0.02	450.21	-0.16	450.21	0.38	0.54	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.10	47.36	6.74	621.87	767.85	10.15	578.43	522.97	1.99
MEAN	50.20	44.80	5.40	540.16	703.30	10.15	578.43	522.97	1.99
HUB	44.59	38.84	5.75	443.66	632.18	10.15	578.43	522.97	1.99

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	534.47	284.11	452.70	1191.55	0.45	2.05	1.78	7.43
MEAN	15.50	541.58	284.92	460.58	1187.27	0.46	2.13	1.86	5.75
HUB	12.59	579.51	340.54	468.90	1183.18	0.49	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	608.97	557.20	324.86	0.47	5099.80	0.92	0.91		
MEAN	526.06	519.89	241.14	0.44	4417.97	0.92	0.91	0.91	1.48
HUB	427.36	476.87	86.83	0.40	4289.38	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	13.05	1.16	11.39	622.25	1.05	599.44	533.32	1.41
MEAN	12.80	1.14	11.12	618.56	1.04	595.14	532.13	1.54
HUB	12.75	1.14	10.85	617.86	1.04	591.05	532.16	1.67

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.11	35.66	31.50	4.16	0.93	0.41	1.40
MEAN	31.74	27.64	23.50	4.14	0.92	0.38	1.64
HUB	35.99	10.49	6.50	3.99	0.92	0.38	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.998	0.495	73.000

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 ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
  R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
 15.2185   607.3917   290.1399   533.6136  1182.1663     0.5138    -0.2134     2.0437

  Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
 12.8311    10.7445   590.1249   532.9769     1.7387    28.5341    33.0000     4.4659

  STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
 RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
 15.2185   540.1931   123.3535   525.9206  1188.3105     0.4546    -0.0012     2.1315

 BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
  0.9500    12.7826    11.1165   596.2804   532.5021   410.5396     0.0478     0.3129

  VANED DIFFUSER EXIT:
 R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
 14.7013   522.2797     0.0000   522.2797  1189.7889     0.4390     0.2312     0.5109

 Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
  0.9500    11.2269   597.8046   532.7139     0.0000     0.0600     0.0434     0.0620

  STAGE EXIT CONDITIONS, STAGE             5
  Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
  0.8721    12.7902     1.1401   619.5562    24.9423   266.7877     2.0681

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 156341.172       0.422     665.702  726472.438   0.252522E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3408   Tt4 =   619.5562   T1  =   462.0897

   OVERALL EXIT CONDITIONS; ALL          5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    983352.44   4187.1201    202.3185      2.4752      0.8306      3.0542      1.3408     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 75.6%     07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.482   EfDer =  0.998    SH =  0.302674E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     66.367    3629.122       5.167     462.089       1.000       1.000       0.980
  W Kg/sec =  30.167  Wdry =  66.347  WH2O = 0.020  lbm/sec   H2O =   0.136g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     178.204   3844.976       1.381       0.249      53.358      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 142742.766   52068.957       1.594     831.557     521.700     619.754       1.188

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   411.98    -0.14   411.98     0.40     0.75   692.19
 MEAN    17.06     0.00    -0.02   411.98    -0.14   411.98     0.40     0.66
 HUB     12.51     0.00    -0.02   411.98    -0.14   411.98     0.40     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.77    50.47     7.30   653.35   772.52     4.64   448.45   454.08    17.66
 MEAN    52.68    47.20     5.48   540.30   679.56     4.64   448.45   454.08    17.66
 HUB     43.89    38.62     5.27   396.19   571.67     4.64   448.45   454.08    17.66

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   644.09   363.80   531.51  1052.25      0.61     7.29     6.52    16.04
 MEAN    18.04   679.11   403.97   545.89  1046.78      0.65     7.43     6.80    12.53
 HUB     15.00   783.55   532.18   575.10  1036.84      0.76     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    653.35   605.26   289.55     0.58  7508.12      0.92     0.91
 MEAN   571.20   570.93   167.23     0.55  7288.50      0.92     0.91     0.91     1.32
 HUB    475.05   577.93    57.12     0.56  7984.40      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.73     1.30     5.24   500.31     1.08   466.97   480.25    11.61
 MEAN     6.68     1.29     5.05   499.19     1.08   462.13   480.16    13.96
 HUB      6.84     1.32     4.70   502.74     1.09   453.39   484.13    19.68

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.39    28.58    24.20     4.38     0.93     0.35     1.80
 MEAN    36.50    17.03    12.70     4.33     0.92     0.30     2.22
 HUB     42.78    -5.67    -9.30     3.63     0.92     0.16     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   719.2814   403.1889   595.6546  1043.4165     0.6894    -0.0761     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7304     4.9161   459.1791   481.7861    16.2087    34.0934    35.4000     1.3066

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   564.6568   138.1323   547.5005  1061.3665     0.5320     0.3092     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6999     5.5386   475.1322   479.8256   554.9116     0.0275     0.4210

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   560.6163     0.0000   560.6163  1061.7371     0.5280     0.3409     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5346   475.5034   480.2422     0.0000     0.0600     0.0409     0.3069
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8751     6.6764     1.2921   500.7454    38.6590   220.1158     1.7063

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 240606.453       0.564     902.390  735730.375   0.552108E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.505   EfDer =  1.000    SH =  0.901810E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     66.367    3629.122       6.676     500.745       1.000       1.000       0.980
 W Kg/sec =  30.167  Wdry =  66.308  WH2O = 0.060  lbm/sec   H2O =   0.467g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    143.576    3693.611       1.380       0.249      53.378      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 123338.664   52056.703       1.404     590.487     420.484     468.502       1.114

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   501.29    -0.17   501.29     0.47     0.77   662.37
 MEAN    18.08     0.00    -0.02   501.29    -0.17   501.29     0.47     0.71
 HUB     15.21     0.00    -0.02   501.29    -0.17   501.29     0.47     0.65

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.40    46.36     6.04   650.82   821.63     5.75   480.59   481.35    14.91
 MEAN    48.80    42.30     6.50   572.54   761.11     5.75   480.59   481.35    14.91
 HUB     43.87    37.84     6.03   481.70   695.33     5.75   480.59   481.35    14.91

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   577.06   294.58    496.21  1093.67      0.53     2.33     2.04     9.02
 MEAN    18.01   592.03   308.37    505.38  1089.60      0.54     2.40     2.13     7.35
 HUB     15.22   644.67   387.50    515.21  1085.82      0.59     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    646.70   608.45   352.12     0.56  6018.96      0.92     0.91
 MEAN   570.38   569.26   262.01     0.52  5556.80      0.92     0.91     0.91     1.45
 HUB    482.11   523.82    94.62     0.48  5901.50      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.13     1.22     6.74   531.32     1.06   504.61   497.25     7.21
 MEAN     8.01     1.20     6.57   528.97     1.06   500.86   496.38     8.11
 HUB      8.10     1.21     6.40   530.72     1.06   497.39   497.88     9.05

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     30.70    35.36    31.50     3.86     0.93     0.39     1.40
 MEAN    31.39    27.40    23.50     3.90     0.93     0.38     1.63
 HUB     36.95    10.41     6.50     3.91     0.93     0.39     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   660.0411   309.2328  583.1203  1083.6073     0.6091    -0.1808     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.0676     6.2995   495.4116  498.0308     9.8133    27.9373    30.6000     2.6627

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   549.8896  116.5805  537.3896  1095.2322     0.5021     0.1420     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.0443     6.7873   506.0971   496.6037   491.5697     0.0255     0.2969

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   574.9719     0.0000   574.9719  1092.7618     0.5262     0.2042     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6605	503.8393	497.1248	0.0000	0.0600	0.0393	0.0580

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8781	8.0234	1.2018	530.3386	29.5949	249.5958	1.9349

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
184591.797	0.441	692.308	660628.688	0.109306E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.726 EfDer = 1.000 SH = 0.137656E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
66.367	3629.122	8.023	530.338	1.000	1.000	0.980

W Kg/sec = 30.167 Wdry = 66.276 WH2O = 0.091 lbm/sec H2O = 0.825g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
122.950	3589.080	1.379	0.249	53.393	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
106694.203	52046.977	1.514	545.479	360.203	424.468	1.178

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	469.42	-0.16	469.42	0.43	0.72	628.59
MEAN	17.74	0.00	-0.02	469.42	-0.16	469.42	0.43	0.66	
HUB	15.05	0.00	-0.02	469.42	-0.16	469.42	0.43	0.61	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.56	46.36	7.20	635.62	790.30	7.09	512.69	496.96	7.89
MEAN	50.13	43.40	6.73	561.78	732.21	7.09	512.69	496.96	7.89
HUB	45.45	38.84	6.61	476.63	669.10	7.09	512.69	496.96	7.89

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	553.32	293.97	468.76	1126.36	0.49	2.26	1.98	8.75
MEAN	17.51	566.51	306.64	476.34	1122.68	0.50	2.34	2.07	6.78
HUB	14.85	616.01	380.44	484.49	1119.23	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	627.38	575.24	333.41	0.51	5826.88	0.92	0.91		
MEAN	554.43	536.94	247.79	0.48	5371.12	0.92	0.91	0.91	1.48
HUB	470.30	492.75	89.86	0.44	5651.93	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.61	1.20	8.17	559.89	1.06	535.37	510.55	4.50
MEAN	9.48	1.18	7.99	557.58	1.05	531.88	509.77	4.94
HUB	9.56	1.19	7.80	559.00	1.05	528.62	510.90	5.40

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.09	35.42	31.50	3.92	0.93	0.40	1.40
MEAN	32.77	27.48	23.50	3.98	0.93	0.40	1.62
HUB	38.14	10.51	6.50	4.01	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	626.2339	308.6547	544.8864	1117.9288	0.5602	-0.1650	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.5362	7.7284	527.4369	511.0313	5.6714	29.5297	31.5000	1.9703

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	525.4392	114.6210	512.7849	1127.7274	0.4659	0.1475	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.5163	8.2175	536.7250	509.9470	451.3937	0.0228	0.3212

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	536.1374	0.0000	536.1374	1126.7379	0.4758	0.2315	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1469	535.8109	510.2088	0.0000	0.0600	0.0379	0.1024

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8811	9.4925	1.1831	558.8063	28.4827	238.5720	1.8494

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
177991.328	0.452	667.553	632215.438	0.164595E-02

Melt Ratio at Stator LE, Throat, TE
0.48231E-01 0.81043E-01 0.20107E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.069 EfDer = 1.000 SH = 0.194804E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
66.367	3629.122	9.493	558.800	1.000	1.000	0.980

W Kg/sec = 30.167 Wdry = 66.238 WH2O = 0.129 lbm/sec H2O = 1.331g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
106.675	3496.464	1.379	0.250	53.411	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
93556.195	52035.254	1.642	513.330	312.645	395.845	1.266

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	437.40	-0.15	437.40	0.39	0.66	587.65
MEAN	16.97	0.00	-0.02	437.40	-0.15	437.40	0.39	0.61	
HUB	14.32	0.00	-0.02	437.40	-0.15	437.40	0.39	0.56	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.36	46.36	8.00	609.97	750.70	8.58	543.51	510.07	4.68
MEAN	50.87	43.80	7.07	537.46	693.07	8.58	543.51	510.07	4.68
HUB	46.05	37.84	8.21	453.52	630.18	8.58	543.51	510.07	4.68

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	523.79	285.48	439.16	1156.07	0.45	2.16	1.89	8.34
MEAN	16.57	533.57	293.08	445.87	1152.46	0.46	2.24	1.97	6.35
HUB	13.89	576.39	356.33	453.06	1149.03	0.50	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	597.93	538.96	312.45	0.47	5392.85	0.92	0.91		
MEAN	524.90	502.53	231.82	0.44	4860.00	0.92	0.91	0.91	1.50
HUB	439.90	460.70	83.57	0.40	4951.56	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.13	1.17	9.69	586.08	1.05	564.16	521.32	2.93
MEAN	10.96	1.15	9.48	583.38	1.04	560.64	520.42	3.18
HUB	10.99	1.16	9.28	583.85	1.04	557.30	520.99	3.44

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.03	35.43	31.50	3.93	0.93	0.42	1.40
MEAN	33.32	27.47	23.50	3.97	0.93	0.40	1.62
HUB	38.19	10.45	6.50	3.95	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	574.8224	294.7265	493.5150	1149.7307	0.5000	-0.1146	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
11.0102	9.3045	558.0401	521.1985	3.4093	30.8456	32.4000	1.5544

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	488.3393	109.5202	475.8998	1157.2543	0.4220	0.1697	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.9947	9.7433	565.3727	520.4586	432.2457	0.0201	0.3425

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	484.2283	0.0000	484.2283	1157.5199	0.4183	0.2558	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.7408	565.6607	520.4644	0.0000	0.0600	0.0374	0.1680

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8833	10.9678	1.1554	584.3823	25.6373	241.3918	1.8713

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
160527.438	0.449	602.055	626126.313	0.212807E-02

Melt Ratio at Stator LE, Throat, TE
0.67647E+00 0.76553E+00 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.324 EfDer = 0.999 SH = 0.251636E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
66.367	3629.122	10.968	584.373	1.000	1.000	0.980

W Kg/sec = 30.167 Wdry = 66.200 WH2O = 0.167 lbm/sec H2O = 1.932g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
94.415	3419.095	1.378	0.251	53.430	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
83267.594	52023.574	1.841	509.668	276.823	384.739	1.390

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	392.09	-0.14	392.09	0.34	0.60	546.60
MEAN	15.91	0.00	-0.02	392.09	-0.14	392.09	0.34	0.55	
HUB	13.07	0.00	-0.02	392.09	-0.14	392.09	0.34	0.49	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.96	47.36	8.60	580.20	700.37	10.15	572.12	520.55	3.00
MEAN	52.12	44.80	7.32	503.97	638.63	10.15	572.12	520.55	3.00
HUB	46.56	38.84	7.72	413.93	570.25	10.15	572.12	520.55	3.00

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	488.23	284.17	397.01	1183.18	0.41	2.05	1.78	7.43
MEAN	15.50	491.32	280.25	403.55	1179.12	0.42	2.13	1.86	5.75
HUB	12.59	522.51	323.33	410.45	1175.20	0.44	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	568.16	488.12	283.99	0.41	5100.52	0.92	0.91		
MEAN	490.81	455.18	210.56	0.39	4345.38	0.92	0.91	0.91	1.54
HUB	398.73	417.32	75.39	0.36	4072.55	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.67	1.16	11.29	610.13	1.04	591.12	530.72	2.19
MEAN	12.41	1.13	11.03	606.32	1.04	587.07	529.44	2.38
HUB	12.31	1.12	10.77	604.94	1.04	583.17	529.22	2.59

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	35.59	35.58	31.50	4.08	0.93	0.45	1.40
MEAN	34.78	27.55	23.50	4.05	0.93	0.42	1.64
HUB	38.23	10.41	6.50	3.91	0.93	0.41	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	545.1774	285.3908	464.5110	1175.3927	0.4638	-0.1923	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.4331	10.7526	583.4540	530.2103	2.6186	31.5661	33.0000	1.4339

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   469.2535   107.1544   456.8553  1181.5476     0.3972     0.0840     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.4086    11.1492   589.5914   529.6664   410.5396     0.0371     0.3550

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   454.8745     0.0000   454.8745  1182.5729     0.3846     0.2795     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.2222   590.6542   529.8978     0.0000     0.0600     0.0373     0.1350

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8820    12.4083     1.1313   607.1263    22.7547   248.5444     1.9267

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 142859.063       0.443     535.790  637550.563   0.313126E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3139   Tt4 =   607.1263   T1  =   462.0887

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    906576.06   3400.0972    178.2035      2.4013      0.8671      5.4816      1.3139     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 72.7%     07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.832   EfDer =  0.999    SH =  0.308924E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      65.212    3599.863       5.167     462.089       1.000       1.000       0.980
  W Kg/sec =  29.642  Wdry =  65.192  WH2O = 0.020  lbm/sec   H2O =   0.139g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     175.102    3813.977       1.381       0.249      53.358      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  139803.734   51162.594       1.622     831.557     512.623     619.754       1.209

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   403.49    -0.14   403.49     0.39     0.74   686.61
 MEAN    17.06     0.00    -0.02   403.49    -0.14   403.49     0.39     0.65
 HUB     12.51     0.00    -0.02   403.49    -0.14   403.49     0.39     0.55

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.10    50.47     7.63   648.09   763.55      4.66   449.00   454.08    17.61
 MEAN    53.03    47.20     5.83   535.94   670.96      4.66   449.00   454.08    17.61
 HUB     44.26    38.62     5.64   393.00   563.35      4.66   449.00   454.08    17.61

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   635.26   364.87   520.03  1053.05      0.60     7.29     6.52    16.04
 MEAN    18.04   669.08   403.08   534.03  1047.58      0.64     7.43     6.80    12.53
 HUB     15.00   770.18   526.99   561.66  1037.92      0.74     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    648.09   592.15   283.21     0.56  7530.21      0.92     0.91
 MEAN   566.60   558.50   163.52     0.53  7272.34      0.92     0.91     0.91     1.34
 HUB    471.22   564.42    55.77     0.54  7906.65      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.72     1.30     5.27   500.11     1.08   467.68   480.12    11.58
 MEAN     6.66     1.29     5.08   498.81     1.08   462.83   479.89    13.92
 HUB      6.81     1.32     4.74   502.02     1.09   454.34   483.56    19.41

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.06    28.57    24.20     4.37     0.93     0.36     1.80
 MEAN    37.05    17.02    12.70     4.32     0.92     0.31     2.22
 HUB     43.18    -5.67    -9.30     3.63     0.92     0.17     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   707.4426   402.2976   581.9207  1044.4629     0.6773    -0.0735     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7127     4.9546   460.1043   481.4440    16.0233    34.6572    35.4000     0.7428

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   552.3212   135.1146   535.5397  1062.1151     0.5200     0.3185     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6843     5.5717   475.8066   479.5599   554.9116     0.0267     0.4285

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   548.1626     0.0000   548.1626  1062.4886     0.5159     0.3499     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5698   476.1798   479.9831     0.0000     0.0600     0.0390     0.3174
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8780     6.6634     1.2895   500.3118    38.2255   217.9101     1.6892

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 237918.609       0.566     876.779  720582.250   0.567174E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.867   EfDer =  1.000    SH =  0.927397E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     65.212    3599.863       6.663     500.311       1.000       1.000       0.980
 W Kg/sec =  29.642  Wdry =  65.152  WH2O = 0.060  lbm/sec   H2O =   0.482g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    141.291    3665.420       1.380       0.249      53.378      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 120791.617   51150.164       1.427     590.487     413.801     468.502       1.132

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   490.93    -0.17   490.93     0.46     0.76   657.31
 MEAN    18.08     0.00    -0.02   490.93    -0.17   490.93     0.46     0.70
 HUB     15.21     0.00    -0.02   490.93    -0.17   490.93     0.46     0.64

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.76    46.36     6.40   645.57   811.17     5.78   480.98   481.14    15.14
 MEAN    49.17    42.30     6.87   567.92   750.83     5.78   480.98   481.14    15.14
 HUB     44.23    37.84     6.39   477.82   685.19     5.78   480.98   481.14    15.14

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   569.71   296.44   486.52  1093.87     0.52     2.33     2.04     9.02
 MEAN    18.01   584.02   309.03   495.56  1089.76     0.54     2.40     2.13     7.35
 HUB     15.22   635.58   385.60   505.24  1085.93     0.59     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    641.49   596.45   345.05     0.55  6056.77     0.92     0.91
 MEAN   565.78   558.12   256.75     0.51  5568.66     0.92     0.91     0.91     1.46
 HUB    478.23   513.66    92.63     0.47  5872.57     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.12     1.22     6.76   530.83     1.06   504.80   497.08     7.38
 MEAN     7.99     1.20     6.59   528.37     1.06   501.02   496.14     8.31
 HUB      8.07     1.21     6.42   529.90     1.06   497.50   497.53     9.28

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.35    35.35    31.50     3.85     0.93     0.39     1.40
 MEAN    31.95    27.39    23.50     3.89     0.93     0.38     1.63
 HUB     37.35    10.39     6.50     3.89     0.93     0.39     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   649.4860   309.8966   570.7855  1084.1176     0.5991    -0.1759     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.0432     6.3297   495.8828   497.7305     9.9465    28.4989    30.6000     2.1011

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   538.4592   114.1572   526.2191  1095.6152     0.4915     0.1545     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     8.0220     6.8157   506.4567   496.3235   491.5697     0.0245     0.3050

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   562.5728     0.0000   562.5728  1093.2906     0.5146     0.2135     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6955	504.3323	496.8290	0.0000	0.0600	0.0381	0.0727

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8799	8.0019	1.2009	529.6987	29.3887	246.2862	1.9092

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
183321.172	0.445	675.576	646702.188	0.112300E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 7.044 EfDer = 1.000 SH = 0.141319E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.212	3599.863	8.002	529.698	1.000	1.000	0.980

W Kg/sec = 29.642 Wdry = 65.120 WH2O = 0.092 lbm/sec H2O = 0.848g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
121.062	3562.293	1.379	0.250	53.394	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
104644.211	51140.387	1.538	545.479	354.679	424.468	1.197

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	460.40	-0.16	460.40	0.42	0.71	623.90
MEAN	17.74	0.00	-0.02	460.40	-0.16	460.40	0.42	0.66	
HUB	15.05	0.00	-0.02	460.40	-0.16	460.40	0.42	0.60	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.87	46.36	7.51	630.49	780.83	7.11	512.73	496.72	8.11
MEAN	50.44	43.40	7.04	557.25	722.96	7.11	512.73	496.72	8.11
HUB	45.77	38.84	6.93	472.79	660.04	7.11	512.73	496.72	8.11

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	546.74	295.15	460.23	1126.16	0.49	2.26	1.98	8.75
MEAN	17.51	559.34	306.81	467.69	1122.47	0.50	2.34	2.07	6.78
HUB	14.85	607.84	378.38	475.71	1118.99	0.54	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	622.33	564.68	327.18	0.50	5850.06	0.92	0.91		
MEAN	549.96	527.12	243.15	0.47	5374.01	0.92	0.91	0.91	1.49
HUB	466.51	483.81	88.13	0.43	5621.29	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.58	1.20	8.17	559.12	1.06	535.19	510.31	4.64
MEAN	9.45	1.18	7.99	556.73	1.05	531.68	509.49	5.11
HUB	9.52	1.19	7.81	557.97	1.05	528.39	510.55	5.58

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.67	35.41	31.50	3.91	0.93	0.41	1.40
MEAN	33.27	27.47	23.50	3.97	0.93	0.40	1.62
HUB	38.50	10.50	6.50	4.00	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	617.1943	308.8241	534.3749	1117.9464	0.5521	-0.1615	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4993	7.7437	527.4594	510.7207	5.8219	30.0243	31.5000	1.4757

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	515.3802	112.4267	502.9681	1127.6782	0.4570	0.1586	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4808	8.2317	536.6848	509.6360	451.3937	0.0221	0.3282

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   525.7308     0.0000   525.7308  1126.7369     0.4666     0.2393     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.1638   535.8167   509.8933     0.0000     0.0600     0.0374     0.1141

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8820     9.4576     1.1819   557.9254    28.2422   235.8393     1.8282

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 176508.438       0.456     650.470  619708.250   0.168585E-02

Melt Ratio at Stator LE, Throat, TE
0.49917E-01 0.84141E-01 0.20815E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 7.344   EfDer =  0.999    SH =  0.199073E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     65.212    3599.863       9.458     557.919       1.000       1.000       0.980
 W Kg/sec =  29.642  Wdry =  65.082  WH2O = 0.130  lbm/sec   H2O =   1.361g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    105.123    3471.011       1.379       0.250      53.413      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  91894.227   51128.738       1.666     513.330     308.103     395.845       1.285

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   429.63    -0.15   429.63     0.38     0.65   583.37
 MEAN    16.97     0.00    -0.02   429.63    -0.15   429.63     0.38     0.60
 HUB     14.32     0.00    -0.02   429.63    -0.15   429.63     0.38     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     54.63    46.36     8.27   605.05   742.19     8.58   543.17   509.78     4.84
 MEAN    51.14    43.80     7.34   533.13   684.81     8.58   543.17   509.78     4.84
 HUB     46.33    37.84     8.49   449.86   622.16     8.58   543.17   509.78     4.84

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     18.88   517.92   286.06   431.75  1155.49      0.45     2.16     1.89     8.34
 MEAN    16.57   527.17   292.87   438.34  1151.88      0.46     2.24     1.97     6.35
 HUB     13.89   569.10   354.27   445.39  1148.44      0.50     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    593.11   529.80   307.05     0.46  5403.70      0.92     0.91
 MEAN   520.66   493.99   227.79     0.43  4856.49      0.92     0.91     0.91     1.51
 HUB    436.35   452.89    82.08     0.39  4922.90      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     11.08     1.17     9.67   585.03     1.05   563.60   521.01     3.04
 MEAN    10.91     1.15     9.47   582.28     1.04   560.08   520.09     3.30
 HUB     10.93     1.16     9.26   582.62     1.04   556.74   520.61     3.57

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.53    35.42    31.50     3.92     0.93     0.42     1.40
 MEAN    33.75    27.46    23.50     3.96     0.93     0.41     1.62
 HUB     38.50    10.44     6.50     3.94     0.93     0.42     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   567.3364   294.5163   484.9029  1149.2706     0.4936    -0.1127     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.9569     9.2979   557.5992   520.8503     3.5261    31.2733    32.4000     1.1267

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   479.8134   107.6081   467.5910  1156.7714     0.4148     0.1787     2.2705
```

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.9425	9.7361	564.9071	520.1033	432.2457	0.0196	0.3486

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	475.7774	0.0000	475.7774	1157.0249	0.4112	0.2625	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.7333	565.1834	520.1119	0.0000	0.0600	0.0370	0.1769

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8839	10.9162	1.1542	583.2550	25.3915	239.0079	1.8528

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
159008.125	0.452	585.978	614425.313	0.217301E-02

Melt Ratio at Stator LE, Throat, TE
0.68643E+00 0.77626E+00 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.556 EfDer = 0.999 SH = 0.260876E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.212	3599.863	10.916	583.247	1.000	1.000	0.980

W Kg/sec = 29.642 Wdry = 65.042 WH2O = 0.170 lbm/sec H2O = 2.000g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
93.121	3394.805	1.378	0.251	53.433	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
81909.859	51116.258	1.867	509.668	273.042	384.739	1.409

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	385.69	-0.13	385.69	0.33	0.60	542.72
MEAN	15.91	0.00	-0.02	385.69	-0.13	385.69	0.33	0.54	
HUB	13.07	0.00	-0.02	385.69	-0.13	385.69	0.33	0.48	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	56.18	47.36	8.82	575.52	692.92	10.13	571.39	520.29	3.17
MEAN	52.36	44.80	7.56	499.90	631.50	10.13	571.39	520.29	3.17
HUB	46.80	38.84	7.96	410.59	563.43	10.13	571.39	520.29	3.17

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	483.19	284.07	390.87	1182.21	0.41	2.05	1.78	7.43
MEAN	15.50	485.83	279.68	397.25	1178.18	0.41	2.13	1.86	5.75
HUB	12.59	516.22	321.35	404.00	1174.28	0.44	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	563.58	480.52	279.51	0.41	5098.65	0.92	0.91		
MEAN	486.85	448.03	207.18	0.38	4336.42	0.92	0.91	0.91	1.55
HUB	395.51	410.75	74.16	0.35	4047.59	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.60	1.15	11.25	608.78	1.04	590.17	530.42	2.31
MEAN	12.33	1.13	10.99	604.96	1.04	586.15	529.13	2.52
HUB	12.24	1.12	10.74	603.52	1.03	582.27	528.89	2.74

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.01	35.57	31.50	4.07	0.93	0.45	1.40
MEAN	35.15	27.54	23.50	4.04	0.93	0.42	1.64
HUB	38.50	10.40	6.50	3.90	0.93	0.41	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	538.4658	284.8039	456.9816	1174.5839	0.4584	-0.1902	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.3610	10.7256	582.6646	529.8986	2.7609	31.9323	33.0000	1.0677

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   461.5979   105.4063   449.4020  1180.7291     0.3909     0.0934     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.3382    11.1223   588.7885   529.3398   410.5396     0.0363     0.3602

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   447.5556     0.0000   447.5556  1181.7131     0.3787     0.2851     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.1919   589.8095   529.5743     0.0000     0.0600     0.0370     0.1432

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8823    12.3373     1.1302   605.7513    22.5057   246.4973     1.9108

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 141334.594       0.445     520.847  626301.188   0.323288E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3109   Tt4 =   605.7513   T1  =   462.0886

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    898091.00   3309.6504    175.1020      2.3876      0.8688      5.8320      1.3109     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 69.9%     07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 6.178   EfDer =  1.000    SH =  0.315175E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      64.067    3570.371       5.167     462.089       1.000       1.000       0.980
  W Kg/sec =  29.121  Wdry =  64.047  WH2O = 0.020  lbm/sec   H2O =   0.142g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     172.026    3782.731       1.381       0.249      53.359      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 136921.016   50263.840       1.651     831.557     503.621     619.754       1.231

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   395.17    -0.14   395.17     0.38     0.73   680.99
 MEAN    17.06     0.00    -0.02   395.17    -0.14   395.17     0.38     0.64
 HUB     12.51     0.00    -0.02   395.17    -0.14   395.17     0.38     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.42    50.47     7.95   642.78   754.65     4.68   449.54   454.07    17.57
 MEAN    53.38    47.20     6.18   531.55   662.46     4.68   449.54   454.07    17.57
 HUB     44.62    38.62     6.00   389.78   555.15     4.68   449.54   454.07    17.57

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   626.69   365.69   508.93  1053.77      0.59     7.29     6.52    16.04
 MEAN    18.04   659.31   402.02   522.56  1048.30      0.63     7.43     6.80    12.53
 HUB     15.00   757.26   521.86   548.73  1038.92      0.73     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    642.78   579.47   277.08     0.55  7547.03      0.92     0.91
 MEAN   561.96   546.49   159.94     0.52  7253.11      0.92     0.91     0.91     1.35
 HUB    467.36   551.43    54.50     0.53  7829.57      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.30   499.89     1.08   468.32   479.97    11.57
 MEAN     6.65     1.29     5.11   498.41     1.08   463.48   479.62    13.91
 HUB      6.77     1.31     4.78   501.30     1.08   455.21   483.00    19.19

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.70    28.57    24.20     4.37     0.93     0.37     1.80
 MEAN    37.57    17.02    12.70     4.32     0.93     0.32     2.22
 HUB     43.56    -5.67    -9.30     3.63     0.93     0.17     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   696.0059   401.2362   568.7123  1045.4167     0.6658    -0.0710     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6940     4.9898   460.9487   481.1044    15.8806    35.2036    35.4000     0.1964

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   540.4739   132.2164   524.0523  1062.7743     0.5085     0.3274     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6674     5.6008   476.4007   479.2893   554.9116     0.0261     0.4356

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   536.2464     0.0000   536.2464  1063.1455     0.5044     0.3584     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.6006   476.7717   479.7189     0.0000     0.0600     0.0376     0.3273
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8803     6.6485     1.2867   499.8649    37.7787   215.7722     1.6727

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 235148.047       0.569     851.349  705723.688   0.582065E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.215   EfDer =  1.000    SH =  0.952426E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.067    3570.371       6.649     499.864       1.000       1.000       0.980
 W Kg/sec =  29.121  Wdry =  64.006  WH2O = 0.061  lbm/sec   H2O =   0.497g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    139.058    3637.016       1.380       0.249      53.379      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 118337.859   50251.262       1.450     590.487     407.265     468.502       1.150

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   480.96    -0.17   480.96     0.45     0.75   652.22
 MEAN    18.08     0.00    -0.02   480.96    -0.17   480.96     0.45     0.69
 HUB     15.21     0.00    -0.02   480.96    -0.17   480.96     0.45     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.09     46.36     6.73   640.28   800.94     5.80   481.31   480.91    15.38
 MEAN    49.52     42.30     7.22   563.27   740.80     5.80   481.31   480.91    15.38
 HUB     44.59     37.84     6.75   473.90   675.33     5.80   481.31   480.91    15.38

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   562.61   297.95   477.24  1093.97     0.51     2.33     2.04     9.02
 MEAN    18.01   576.26   309.44   486.14  1089.84     0.53     2.40     2.13     7.35
 HUB     15.22   626.75   383.59   495.66  1085.98     0.58     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    636.23   584.98   338.28     0.53  6087.51     0.92     0.91
 MEAN   561.14   547.43   251.71     0.50  5575.91     0.92     0.91     0.91     1.47
 HUB    474.31   503.89    90.72     0.46  5841.88     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.09     1.22     6.77   530.28     1.06   504.90   496.87     7.56
 MEAN     7.96     1.20     6.60   527.73     1.06   501.10   495.88     8.52
 HUB      8.03     1.21     6.43   529.06     1.06   497.56   497.17     9.53

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.98    35.33    31.50     3.83     0.93     0.40     1.40
 MEAN    32.48    27.37    23.50     3.87     0.93     0.39     1.63
 HUB     37.74    10.37     6.50     3.87     0.93     0.40     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   639.3879   310.3037   559.0425  1084.5151     0.5896    -0.1714     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.0151     6.3540   496.2512   497.4129    10.0998    29.0330    30.6000     1.5670

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   527.6115   111.8574   515.6179  1095.8813     0.4814     0.1662     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     7.9956     6.8372   506.7079   496.0236   491.5697     0.0237     0.3125

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   550.8832     0.0000   550.8832  1093.6836     0.5037     0.2218     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7225	504.6999	496.5154	0.0000	0.0600	0.0374	0.0860

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8809	7.9759	1.1996	529.0210	29.1578	243.1940	1.8852

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
181896.031	0.449	658.551	633141.875	0.115220E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 7.342 EfDer = 0.999 SH = 0.144864E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.067	3570.371	7.976	529.020	1.000	1.000	0.980

W Kg/sec = 29.121 Wdry = 63.974 WH2O = 0.093 lbm/sec H2O = 0.870g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
119.248	3535.372	1.379	0.250	53.395	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
102692.156	50241.445	1.561	545.479	349.372	424.468	1.215

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	451.81	-0.16	451.81	0.41	0.70	619.18
MEAN	17.74	0.00	-0.02	451.81	-0.16	451.81	0.41	0.65	
HUB	15.05	0.00	-0.02	451.81	-0.16	451.81	0.41	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.16	46.36	7.80	625.33	771.60	7.12	512.68	496.46	8.34
MEAN	50.74	43.40	7.34	552.68	713.98	7.12	512.68	496.46	8.34
HUB	46.07	38.84	7.23	468.92	651.28	7.12	512.68	496.46	8.34

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	540.39	295.92	452.16	1125.85	0.48	2.26	1.98	8.75
MEAN	17.51	552.44	306.70	459.49	1122.15	0.49	2.34	2.07	6.78
HUB	14.85	599.98	376.23	467.37	1118.66	0.54	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	617.23	554.70	321.30	0.49	5865.39	0.92	0.91		
MEAN	545.46	517.82	238.76	0.46	5371.95	0.92	0.91	0.91	1.50
HUB	462.69	475.30	86.46	0.42	5589.30	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.54	1.20	8.17	558.28	1.06	534.90	510.03	4.80
MEAN	9.40	1.18	7.99	555.82	1.05	531.39	509.18	5.28
HUB	9.46	1.19	7.80	556.90	1.05	528.08	510.17	5.77

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.20	35.40	31.50	3.90	0.93	0.42	1.40
MEAN	33.72	27.46	23.50	3.96	0.93	0.41	1.62
HUB	38.83	10.48	6.50	3.98	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	608.5686	308.7084	524.4567	1117.8409	0.5444	-0.1583	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4554	7.7504	527.3655	510.3783	5.9858	30.4821	31.5000	1.0179

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	505.9300	110.3652	493.7456	1127.4944	0.4487	0.1686	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4382	8.2358	536.5161	509.2931	451.3937	0.0216	0.3346

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	515.9702	0.0000	515.9702	1126.5963	0.4580	0.2463	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1704	535.6888	509.5472	0.0000	0.0600	0.0370	0.1246

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8826	9.4154	1.1805	556.9819	27.9767	233.3431	1.8089

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
174868.516	0.459	633.108	607522.000	0.172488E-02

Melt Ratio at Stator LE, Throat, TE
0.50523E-01 0.85709E-01 0.21258E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.596 EfDer = 0.999 SH = 0.203315E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.067	3570.371	9.415	556.976	1.000	1.000	0.980

W Kg/sec = 29.121 Wdry = 63.937 WH2O = 0.130 lbm/sec H2O = 1.389g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
103.652	3445.490	1.378	0.250	53.414	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
90324.969	50229.867	1.690	513.330	303.799	395.845	1.303

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	422.29	-0.15	422.29	0.37	0.65	579.08
MEAN	16.97	0.00	-0.02	422.29	-0.15	422.29	0.37	0.60	
HUB	14.32	0.00	-0.02	422.29	-0.15	422.29	0.37	0.54	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.87	46.36	8.51	600.09	733.90	8.57	542.73	509.46	5.00
MEAN	51.40	43.80	7.60	528.76	676.81	8.57	542.73	509.46	5.00
HUB	46.58	37.84	8.74	446.17	614.43	8.57	542.73	509.46	5.00

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	512.25	286.24	424.81	1154.79	0.44	2.16	1.89	8.34
MEAN	16.57	521.03	292.38	431.26	1151.19	0.45	2.24	1.97	6.35
HUB	13.89	562.13	352.13	438.17	1147.75	0.49	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	588.25	521.22	302.01	0.45	5407.09	0.92	0.91		
MEAN	516.40	485.97	224.02	0.42	4848.30	0.92	0.91	0.91	1.52
HUB	432.78	445.53	80.65	0.39	4893.13	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.02	1.17	9.65	583.88	1.05	562.92	520.66	3.15
MEAN	10.85	1.15	9.44	581.10	1.04	559.41	519.72	3.43
HUB	10.86	1.15	9.24	581.32	1.04	556.08	520.19	3.71

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.97	35.41	31.50	3.91	0.93	0.43	1.40
MEAN	34.14	27.45	23.50	3.95	0.93	0.41	1.62
HUB	38.79	10.43	6.50	3.93	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	560.1866	294.0220	476.8229	1148.6821	0.4877	-0.1109	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.8938	9.2802	557.0337	520.4633	3.6548	31.6591	32.4000	0.7409

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	471.8521	105.8226	459.8325	1156.1455	0.4081	0.1868	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.8803     9.7163   564.3018   519.7094   432.2457     0.0192     0.3540

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   467.8894     0.0000   467.8894  1156.3887     0.4046     0.2684     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.7132   564.5673   519.7214     0.0000     0.0600     0.0368     0.1847

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8842    10.8545     1.1529   582.0425    25.1229   236.8775     1.8363

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 157345.156       0.455     569.665  603011.938   0.221833E-02

Melt Ratio at Stator LE, Throat, TE
0.69261E+00 0.78303E+00 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.762   EfDer =  0.999    SH =  0.268653E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.067    3570.371      10.855     582.035       1.000       1.000       0.980
 W Kg/sec =  29.121  Wdry =  63.895  WH2O = 0.172  lbm/sec   H2O =   2.056g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     91.909    3370.499       1.377       0.251      53.435      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  80636.117   50216.895       1.891     509.668     269.502     384.739       1.428

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   379.70    -0.13   379.69     0.33     0.59   538.83
 MEAN    15.91     0.00    -0.02   379.70    -0.13   379.69     0.33     0.54
 HUB     13.07     0.00    -0.02   379.70    -0.13   379.69     0.33     0.48

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.37    47.36     9.01   570.80   685.66    10.09   570.55   519.96     3.33
 MEAN    52.56    44.80     7.76   495.81   624.60    10.09   570.55   519.96     3.33
 HUB     47.01    38.84     8.17   407.23   556.87    10.09   570.55   519.96     3.33

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   478.31   283.64   385.13  1181.12      0.40     2.05     1.78     7.43
 MEAN    15.50   480.53   278.81   391.37  1177.12      0.41     2.13     1.86     5.75
 HUB     12.59   510.20   319.26   397.96  1173.25      0.43     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    558.96   473.42   275.32     0.40  5090.94      0.92     0.91
 MEAN   482.86   441.37   204.05     0.37  4323.03      0.92     0.91     0.91     1.56
 HUB    392.27   404.60    73.01     0.34  4021.23      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.51     1.15    11.19   607.31     1.04   589.08   530.04     2.44
 MEAN    12.25     1.13    10.94   603.50     1.04   585.10   528.76     2.65
 HUB     12.15     1.12    10.69   602.00     1.03   581.26   528.49     2.88

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     36.37    35.56    31.50     4.06     0.93     0.46     1.40
 MEAN    35.47    27.54    23.50     4.04     0.93     0.43     1.64
 HUB     38.74    10.40     6.50     3.90     0.93     0.41     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   532.0501   283.9268   449.9588  1173.6390     0.4533    -0.1882     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.2765    10.6852   581.7373   529.5138     2.9001    32.2522    33.0000     0.7478
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   454.4975   103.7849   442.4892  1179.7579     0.3852     0.1016     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.2550    11.0802   587.8308   528.9435   410.5396     0.0357     0.3646

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   440.7608     0.0000   440.7608  1180.7053     0.3733     0.2899     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.1465   588.8141   529.1810     0.0000     0.0600     0.0368     0.1503

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8825    12.2536     1.1289   604.2720    22.2380   244.7145     1.8970

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 139685.000       0.447     505.727  615302.500   0.331827E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3077   Tt4 =   604.2720   T1  =   462.0885

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    888942.75   3218.3982    172.0265      2.3714      0.8701      6.1785      1.3077     37.3740
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5µm, ISA +36R

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*********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
*********************************************************************

       Fan Core + 4 Stage LPC 100%   07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 3.167   EfDer =  0.987    SH =  0.589419E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     73.521    3974.631       5.167     482.270       1.000       1.000       0.980
 W Kg/sec =  33.418  Wdry =  73.477  WH2O = 0.043  lbm/sec   H2O =   0.246g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     201.679    4121.995       1.381       0.249      53.367      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 169861.500   57674.473       1.408     831.557     590.533     619.754       1.049

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   490.25    -0.17   490.25     0.47     0.83   742.06
 MEAN    17.06     0.00    -0.02   490.25    -0.17   490.25     0.47     0.73
 HUB     12.51     0.00    -0.02   490.25    -0.17   490.25     0.47     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.59     50.47     5.12   715.56   867.53     4.46   462.97   467.95    16.48
 MEAN    50.37     47.20     3.17   591.73   768.56     4.46   462.97   467.95    16.48
 HUB     41.52     38.62     2.90   433.91   654.80     4.46   462.97   467.95    16.48

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   737.39   366.45   639.89  1067.60      0.69     7.29     6.52    16.04
 MEAN    18.04   782.74   423.59   658.22  1061.93      0.74     7.43     6.80    12.53
 HUB     15.00   922.38   591.20   707.99  1048.13      0.88     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    715.56   728.92   349.11     0.68  7563.30      0.92     0.90
 MEAN   625.58   688.52   202.00     0.65  7642.68      0.92     0.90     0.90     1.22
 HUB    520.28   711.54    70.93     0.68  8870.17      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.80     1.32     4.96   524.40     1.09   480.74   493.58    11.04
 MEAN     6.82     1.32     4.78   524.85     1.09   475.64   494.92    13.22
 HUB      7.12     1.38     4.33   531.68     1.10   463.36   503.13    20.76

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.80    28.62    24.20     4.42     0.93     0.28     1.80
 MEAN    32.76    17.06    12.70     4.36     0.91     0.23     2.22
 HUB     39.86    -5.72    -9.30     3.58     0.91     0.07     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.987       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   843.7387   422.7628   730.1826  1055.4073     0.7994    -0.1027     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.8947     4.5467   469.8382   498.0013    16.8162    30.0701    35.4000     5.3299

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   683.1503   167.1194   662.3937  1077.2642     0.6342     0.2412     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.8288     5.2261   489.5245   493.7339   554.9116     0.0396     0.3688

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   683.6775     0.0000   683.6775  1077.1611     0.6347     0.2682     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.1765	489.4780	494.2523	0.0000	0.0600	0.0674	0.2190

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8319	6.7668	1.3096	526.9752	44.7075	235.6317	1.8266

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
278538.313	0.544	1157.246	812108.063	0.958559E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.943 EfDer = 0.992 SH = 0.146750E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.521	3974.631	6.767	526.974	1.000	1.000	0.980

W Kg/sec = 33.418 Wdry = 73.413 WH2O = 0.108 lbm/sec H2O = 0.703g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
160.984	3943.300	1.379	0.249	53.396	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
147781.656	57654.551	1.252	590.487	471.624	468.502	0.993

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	600.61	-0.21	600.61	0.55	0.86	707.14
MEAN	18.08	0.00	-0.02	600.61	-0.21	600.61	0.55	0.80	
HUB	15.21	0.00	-0.02	600.61	-0.21	600.61	0.55	0.74	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.89	46.36	3.53	712.78	932.25	5.51	498.09	495.06	11.38
MEAN	46.24	42.30	3.94	627.05	868.44	5.51	498.09	495.06	11.38
HUB	41.31	37.84	3.47	527.56	799.55	5.51	498.09	495.06	11.38

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	655.51	288.76	588.49	1115.80	0.59	2.33	2.04	9.02
MEAN	18.01	675.43	312.51	598.78	1111.96	0.61	2.40	2.13	7.35
HUB	15.22	737.49	414.49	609.99	1108.50	0.67	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	708.27	722.71	419.51	0.65	5900.74	0.92	0.91		
MEAN	624.68	675.27	312.17	0.61	5632.04	0.92	0.91	0.91	1.39
HUB	528.01	620.47	113.53	0.56	6312.89	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.26	1.22	6.56	559.75	1.06	525.34	509.02	5.33
MEAN	8.19	1.21	6.40	558.25	1.06	521.73	508.80	5.90
HUB	8.37	1.24	6.25	562.04	1.07	518.49	511.34	6.46

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.14	35.48	31.50	3.98	0.93	0.34	1.40
MEAN	27.56	27.53	23.50	4.03	0.92	0.33	1.63
HUB	34.20	10.54	6.50	4.04	0.92	0.36	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	770.8080	313.3875	704.2253	1101.9858	0.6995	-0.2265	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2565	5.9795	512.4668	511.5618	7.8427	23.9896	30.6000	6.6104

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	661.4235	140.2265	646.3881	1115.3916	0.5930	0.0446	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.2034	6.4869	525.0042	509.2442	491.5697	0.0384	0.2358

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	701.4645	0.0000	701.4645	1110.7216	0.6315	0.1197	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.2520	520.6459	510.2152	0.0000	0.0600	0.0668	-0.0809

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8367	8.1501	1.2044	560.0114	33.0376	275.1260	2.1328

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
206452.906	0.412	857.752	733811.125	0.174625E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.419 EfDer = 0.995 SH = 0.213340E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.521	3974.631	8.150	560.010	1.000	1.000	0.980

W Kg/sec = 33.418 Wdry = 73.364 WH2O = 0.157 lbm/sec H2O = 1.192g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
137.785	3825.221	1.378	0.250	53.417	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
126760.305	57639.414	1.351	545.479	403.852	424.468	1.051

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	557.70	-0.19	557.70	0.50	0.79	669.94
MEAN	17.74	0.00	-0.02	557.70	-0.19	557.70	0.50	0.74	
HUB	15.05	0.00	-0.02	557.70	-0.19	557.70	0.50	0.68	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.31	46.36	4.95	696.13	892.13	6.91	535.17	509.03	5.43
MEAN	47.82	43.40	4.42	615.26	830.55	6.91	535.17	509.03	5.43
HUB	43.12	38.84	4.28	522.01	764.02	6.91	535.17	509.03	5.43

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	624.87	292.97	551.93	1152.85	0.54	2.26	1.98	8.75
MEAN	17.51	642.62	314.18	560.59	1149.26	0.56	2.34	2.07	6.78
HUB	14.85	701.06	408.11	570.02	1145.99	0.61	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	687.11	678.21	394.14	0.59	5807.60	0.92	0.91		
MEAN	607.22	632.56	293.04	0.55	5503.58	0.92	0.91	0.91	1.42
HUB	515.08	579.97	106.97	0.51	6063.27	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.81	1.20	8.06	592.18	1.06	560.99	521.38	2.96
MEAN	9.72	1.19	7.88	590.50	1.05	557.51	521.04	3.21
HUB	9.89	1.21	7.71	593.60	1.06	554.34	522.90	3.46

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	27.96	35.53	31.50	4.03	0.93	0.36	1.40
MEAN	29.27	27.60	23.50	4.10	0.92	0.35	1.62
HUB	35.60	10.63	6.50	4.13	0.92	0.38	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	721.8940	316.2394	648.9404	1141.9270	0.6322	-0.1962	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.7884	7.5061	550.4871	522.8017	3.8446	25.9807	31.5000	5.5193

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	624.9514	136.3289	609.9005	1152.6879	0.5422	0.0617	2.3726

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.7466     8.0021   560.9031   521.3250   451.3937     0.0317     0.2701

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   640.6571     0.0000   640.6571  1151.0017     0.5566     0.1670     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.8872   559.3004   521.5767     0.0000     0.0600     0.0531     0.0020

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8577     9.7056     1.1909   592.0564    32.0837   259.9935     2.0155

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 200982.969       0.426     835.026  693951.500   0.237409E-02

Melt Ratio at Stator LE, Throat, TE
0.32404E+00 0.39719E+00 0.60514E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 5.094   EfDer =  0.997    SH =  0.261797E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     73.521    3974.631       9.706     592.045       1.000       1.000       0.980
 W Kg/sec =  33.418  Wdry =  73.328  WH2O = 0.192  lbm/sec   H2O =   1.687g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    118.967    3720.261       1.378       0.251      53.433      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 109891.406   57628.371       1.472     513.330     348.827     395.845       1.135

ROTOR LEADING EDGE CONDITIONS, STAGE   4

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    19.26     0.00    -0.02   513.77    -0.18   513.77     0.44     0.72   625.27
 MEAN   16.97     0.00    -0.02   513.77    -0.18   513.77     0.44     0.67
 HUB    14.32     0.00    -0.02   513.77    -0.18   513.77     0.44     0.61

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    52.44    46.36     6.08   668.04   842.89     8.51   571.00   520.70     2.70
 MEAN   48.89    43.80     5.09   588.63   781.44     8.51   571.00   520.70     2.70
 HUB    44.04    37.84     6.20   496.69   714.73     8.51   571.00   520.70     2.70

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    18.88   587.87   289.65   511.56  1186.81     0.50     2.16     1.89     8.34
 MEAN   16.57   601.78   303.68   519.54  1183.09     0.51     2.24     1.97     6.35
 HUB    13.89   652.65   383.47   528.12  1179.61     0.55     2.26     2.10     4.19

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   654.86   628.54   365.21     0.53  5472.00     0.92     0.91
 MEAN  574.87   586.06   271.19     0.50  5036.08     0.92     0.91     0.91     1.44
 HUB   481.78   537.19    98.31     0.46  5328.90     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    11.46     1.18     9.72   622.29     1.05   594.74   531.40     1.67
 MEAN   11.31     1.17     9.51   619.88     1.05   591.01   530.77     1.80
 HUB    11.41     1.18     9.30   621.50     1.05   587.54   531.78     1.93

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    29.52    35.52    31.50     4.02     0.93     0.38     1.40
 MEAN   30.31    27.56    23.50     4.06     0.92     0.37     1.62
 HUB    35.98    10.54     6.50     4.04     0.92     0.38     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   653.9508   305.3830   578.2672  1179.1318     0.5546    -0.1307     2.1803

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   11.3763     9.2593   587.1456   531.7690     1.9822    27.8385    32.4000     4.5615
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   572.1424   128.3148   557.5681  1187.1246     0.4820     0.1035     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    11.3462    9.7017   595.1396   531.0303   432.2457     0.0260     0.3006

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   567.5103     0.0000   567.5103  1187.5039     0.4779     0.2074     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6984   595.5688   531.2623     0.0000     0.0600     0.0437     0.1017

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8692    11.3127     1.1656   621.2155    29.1758   259.5812     2.0123

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 183120.656       0.427     760.813  680024.688   0.305011E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.715   EfDer =  0.999    SH =  0.398565E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     73.521    3974.631      11.313     621.214       1.000       1.000       0.980
 W Kg/sec =  33.418  Wdry =  73.227  WH2O = 0.293  lbm/sec   H2O =   2.921g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    104.550    3631.899       1.376       0.252      53.478      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  96608.602   57597.129       1.661     509.668     306.820     384.739       1.254

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   454.88    -0.16   454.88     0.38     0.65   580.62
 MEAN    15.91     0.00    -0.02   454.88    -0.16   454.88     0.38     0.60
 HUB     13.07     0.00    -0.02   454.88    -0.16   454.88     0.38     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     54.41    47.36     7.05   635.43   781.60    10.26   604.80   531.70     2.00
 MEAN    50.51    44.80     5.71   551.95   715.36    10.26   604.80   531.70     2.00
 HUB     44.91    38.84     6.07   453.34   642.32    10.26   604.80   531.70     2.00

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   543.62   294.41   457.00  1218.04      0.45     2.05     1.78     7.43
 MEAN    15.50   550.30   294.11   465.11  1213.60      0.45     2.13     1.86     5.75
 HUB     12.59   588.39   349.06   473.66  1209.36      0.49     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    622.25   562.43   327.85     0.46  5284.53      0.92     0.91
 MEAN   537.54   524.96   243.43     0.43  4560.49      0.92     0.91     0.91     1.49
 HUB    436.69   481.70    87.63     0.40  4396.72      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     13.19     1.17    11.53   650.30     1.05   626.85   541.77     1.45
 MEAN    12.92     1.14    11.25   646.31     1.04   622.29   540.66     1.57
 HUB     12.86     1.14    10.97   645.41     1.04   617.94   540.75     1.70

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.79    35.66    31.50     4.16     0.93     0.41     1.40
 MEAN    32.31    27.63    23.50     4.13     0.92     0.39     1.64
 HUB     36.39    10.48     6.50     3.98     0.92     0.38     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   616.2197   299.5029   538.5394  1208.5476     0.5099    -0.2099     2.0437
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     Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
    12.9544     10.8800    617.2589    541.6602     1.7529     29.0802    33.0000     3.9198

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG        Cth         Cuth        Cmth       Aoth          Machth     cp 2-Th     Stat Chord
    15.2185    544.5317    124.3443    530.1445   1214.9780      0.4482     0.0151     2.1315

    BlockageTh  PtTh       PsTh       TsTh       TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     12.9096    11.2732    623.8566    540.9945   410.5396     0.0457     0.3212

     VANED DIFFUSER EXIT:
    R4         C4          Cu4        Cm4        Ao4           Mach4      cp 3-4   Stator Gap
    14.7013    526.6622     0.0000    526.6622   1216.4075     0.4330     0.2411     0.5109

    Blockage4   Ps4       Ts4        TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     11.3801   625.3823   541.2516      0.0000     0.0600     0.0418     0.0764

     STAGE EXIT CONDITIONS, STAGE             5
     Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
     0.8740     12.9163      1.1418    647.3403    26.1275   263.2569     2.0408

Del Enthalpy   Del_H/U^2    GHP       Reynolds#        SH
 164921.625        0.426     685.202  685912.375   0.491013E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3423   Tt4 =    647.3403   T1  =   482.2698

    OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP         MassFloS1cor   OPR         Efficiency  Rotor1Inc     TR       AxHubLen
    1034016.50   4296.0386    201.6786      2.4997      0.8341      3.1666      1.3423     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 75.6%   07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.640   EfDer =  0.999    SH =  0.684545E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      64.667    3709.801       5.167     482.269       1.000       1.000       0.980
  W Kg/sec =  29.394  Wdry =  64.622  WH2O = 0.044  lbm/sec   H2O =   0.294g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     177.391    3847.346       1.381       0.249      53.370      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 145078.531   50727.059       1.601     831.557     519.452     619.754       1.193

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   418.72    -0.14   418.72     0.40     0.75   692.62
 MEAN    17.06     0.00    -0.02   418.72    -0.14   418.72     0.40     0.66
 HUB     12.51     0.00    -0.02   418.72    -0.14   418.72     0.40     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.92    50.47     7.45   667.88   788.40     4.64   468.19   467.80    15.71
 MEAN    52.84    47.20     5.64   552.31   693.20     4.64   468.19   467.80    15.71
 HUB     44.06    38.62     5.44   405.00   582.64     4.64   468.19   467.80    15.71

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   656.35   374.03   539.36  1075.39      0.61     7.29     6.52    16.04
 MEAN    18.04   691.79   414.16   554.11  1069.73      0.65     7.43     6.80    12.53
 HUB     15.00   797.58   543.56   583.67  1059.61      0.75     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    667.88   614.21   293.85     0.57  7719.18      0.92     0.91
 MEAN   583.90   579.53   169.74     0.54  7472.24      0.92     0.91     0.91     1.33
 HUB    485.61   586.54    57.95     0.55  8155.27      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.74     1.30     5.26   522.39     1.08   487.81   492.08    10.38
 MEAN     6.69     1.29     5.06   521.11     1.08   482.69   492.23    12.37
 HUB      6.84     1.32     4.72   524.66     1.09   473.59   496.65    17.04

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.74    28.58    24.20     4.38     0.93     0.35     1.80
 MEAN    36.78    17.03    12.70     4.33     0.92     0.30     2.22
 HUB     42.96    -5.67    -9.30     3.63     0.92     0.16     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   732.2444   413.3544   604.4171  1066.3785     0.6867    -0.0749     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.7372     4.9333   479.7093   494.0466    14.1805    34.3678    35.4000     1.0322

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   572.7131   140.1031   555.3120  1084.7616     0.5280     0.3147     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.7073     5.5608   496.4117   491.2483   554.9116     0.0272     0.4254

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   568.5411     0.0000   568.5411  1085.1442     0.5239     0.3461     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.5577   496.8010   491.8136     0.0000     0.0600     0.0402     0.3129
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8759     6.6847     1.2937   522.7166    40.4497   218.9974     1.6977

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 252167.141       0.565     921.513  693620.625   0.117596E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.707   EfDer =  1.000    SH =  0.182768E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.667    3709.801       6.685     522.716       1.000       1.000       0.980
 W Kg/sec =  29.394  Wdry =  64.549  WH2O = 0.118  lbm/sec   H2O =   0.909g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    142.755    3695.521       1.379       0.250      53.408      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 125187.688   50704.230       1.412     590.487     418.314     468.502       1.120

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   508.78    -0.18   508.78     0.47     0.77   662.71
 MEAN    18.08     0.00    -0.02   508.78    -0.18   508.78     0.47     0.71
 HUB     15.21     0.00    -0.02   508.78    -0.18   508.78     0.47     0.65

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.60     46.36     6.24   665.29   837.68     5.77   502.01   493.29    12.74
 MEAN    49.01     42.30     6.71   585.27   775.63     5.77   502.01   493.29    12.74
 HUB     44.07     37.84     6.23   492.41   708.17     5.77   502.01   493.29    12.74

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   587.92   304.06   503.18  1117.74      0.53     2.33     2.04     9.02
 MEAN    18.01   602.93   317.32   512.67  1113.50      0.54     2.40     2.13     7.35
 HUB     15.22   656.40   396.90   522.82  1109.57      0.59     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    661.08   616.97   357.02     0.55  6212.48      0.92     0.91
 MEAN   583.06   577.45   265.74     0.52  5718.07      0.92     0.91     0.91     1.46
 HUB    492.83   531.55    95.93     0.48  6044.62      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.16     1.22     6.77   554.88     1.06   527.24   507.73     6.41
 MEAN     8.03     1.20     6.60   552.32     1.06   523.25   507.01     7.17
 HUB      8.12     1.21     6.43   554.01     1.06   519.56   508.60     7.96

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.14    35.36    31.50     3.86     0.93     0.39     1.40
 MEAN    31.76    27.40    23.50     3.90     0.93     0.38     1.63
 HUB     37.20    10.40     6.50     3.90     0.93     0.39     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   671.3428   318.2098   591.1376  1107.5457     0.6062    -0.1780     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.0879     6.3312   517.7172   508.8946     8.5161    28.2936    30.6000     2.3064

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   557.1552   118.1209   544.4900  1119.4745     0.4977     0.1505     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.0654     6.8258   528.9307   506.9719   491.5697     0.0250     0.3026

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   582.3483     0.0000   582.3483  1117.0177     0.5213     0.2109     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7018	526.6407	507.6204	0.0000	0.0600	0.0384	0.0680

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8792	8.0451	1.2035	553.7380	31.0248	247.5375	1.9189

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
194105.891	0.444	709.336	622828.188	0.215587E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.27693E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.955 EfDer = 1.000 SH = 0.257644E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.667	3709.801	8.045	553.735	1.000	1.000	0.980

W Kg/sec = 29.394 Wdry = 64.500 WH2O = 0.167 lbm/sec H2O = 1.483g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
122.084	3590.514	1.378	0.250	53.432	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
108186.070	50689.234	1.524	545.479	357.931	424.468	1.186

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	475.98	-0.16	475.98	0.42	0.72	628.84
MEAN	17.74	0.00	-0.02	475.98	-0.16	475.98	0.42	0.66	
HUB	15.05	0.00	-0.02	475.98	-0.16	475.98	0.42	0.60	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.78	46.36	7.42	649.75	805.57	7.13	535.66	507.22	6.65
MEAN	50.35	43.40	6.95	574.27	746.01	7.13	535.66	507.22	6.65
HUB	45.68	38.84	6.84	487.23	681.25	7.13	535.66	507.22	6.65

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	563.68	303.58	474.95	1151.19	0.49	2.26	1.98	8.75
MEAN	17.51	576.82	315.66	482.78	1147.36	0.50	2.34	2.07	6.78
HUB	14.85	627.00	389.70	491.19	1143.77	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	641.33	582.80	337.75	0.51	6017.20	0.92	0.91		
MEAN	566.76	544.17	251.10	0.47	5529.10	0.92	0.91	0.91	1.49
HUB	480.76	499.56	91.06	0.44	5789.46	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.66	1.20	8.22	584.80	1.06	559.46	519.69	3.78
MEAN	9.52	1.18	8.03	582.28	1.05	555.74	519.00	4.14
HUB	9.59	1.19	7.84	583.63	1.05	552.27	520.17	4.50

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.59	35.42	31.50	3.92	0.93	0.41	1.40
MEAN	33.18	27.48	23.50	3.98	0.93	0.40	1.62
HUB	38.43	10.50	6.50	4.00	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	636.8553	317.7353	551.9320	1142.6238	0.5574	-0.1624	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.5724	7.7752	551.2301	520.3276	4.6521	29.9281	31.5000	1.5719

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	531.9593	116.0433	519.1480	1152.6997	0.4615	0.1564	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.5531	8.2724	560.9956	518.9307	451.3937	0.0224	0.3274

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   542.6265     0.0000   542.6265  1151.6978     0.4712     0.2386     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2040   560.0560   519.1202     0.0000     0.0600     0.0375     0.1125

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8829     9.5296     1.1845   583.5226    29.8361   236.5018     1.8333

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 187151.906       0.455     683.923  596214.125   0.281942E-02

Melt Ratio at Stator LE, Throat, TE
0.44207E+00 0.53106E+00 0.77726E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 7.325   EfDer =  0.999    SH =  0.305969E-02

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     64.667    3709.801       9.530     583.508       1.000       1.000       0.980
 W Kg/sec =  29.394  Wdry =  64.469  WH2O = 0.198  lbm/sec   H2O =   2.011g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    105.802    3497.679       1.377       0.251      53.448      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  94762.789   50679.539       1.654     513.330     310.309     395.845       1.276

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   443.04    -0.15   443.04     0.38     0.66   587.86
 MEAN    16.97     0.00    -0.02   443.04    -0.15   443.04     0.38     0.61
 HUB     14.32     0.00    -0.02   443.04    -0.15   443.04     0.38     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     54.61    46.36     8.25   623.53   765.02     8.63   567.88   518.58     3.51
 MEAN    51.13    43.80     7.33   549.41   705.91     8.63   567.88   518.58     3.51
 HUB     46.31    37.84     8.47   463.60   641.36     8.63   567.88   518.58     3.51

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   533.50   295.02   444.50  1181.57     0.45     2.16     1.89     8.34
 MEAN    16.57   543.08   301.92   451.42  1177.82     0.46     2.24     1.97     6.35
 HUB     13.89   586.35   365.08   458.83  1174.25     0.50     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    611.22   545.49   316.20     0.46  5572.98     0.92     0.91
 MEAN   536.56   508.76   234.64     0.43  5006.63     0.92     0.91     0.91     1.51
 HUB    449.68   466.56    84.60     0.40  5073.12     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     11.19     1.17     9.75   612.23     1.05   589.57   529.35     2.31
 MEAN    11.01     1.16     9.54   609.31     1.04   585.83   528.50     2.50
 HUB     11.03     1.16     9.33   609.65     1.04   582.28   529.07     2.69

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.57    35.43    31.50     3.93     0.93     0.42     1.40
 MEAN    33.78    27.46    23.50     3.96     0.93     0.41     1.62
 HUB     38.51    10.45     6.50     3.95     0.93     0.42     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   584.5731   303.6216   499.5394  1175.0964     0.4975    -0.1128     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   11.0647     9.3677   583.2105   529.3630     2.6881    31.2914    32.4000     1.1086

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   493.9328   110.7747   481.3508  1182.8929     0.4176     0.1805     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    11.0498     9.8190   590.9902   528.5789   432.2457     0.0197     0.3492

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   489.9023     0.0000   489.9023  1183.1666     0.4141     0.2633     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.8146   591.3126   528.8648     0.0000     0.0600     0.0370     0.1777

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8811    11.0232     1.1567   610.3925    26.8862   238.9314     1.8522

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 169015.156       0.452     617.645  590502.813   0.366617E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.576   EfDer =  0.999    SH =  0.474568E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.667    3709.801      11.023     610.391       1.000       1.000       0.980
 W Kg/sec =  29.394  Wdry =  64.360  WH2O = 0.307  lbm/sec   H2O =   3.504g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     93.549    3419.827       1.375       0.252      53.502      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  84353.805   50645.605       1.856     509.668     274.656     384.739       1.401

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   397.18    -0.14   397.18     0.33     0.60   546.72
 MEAN    15.91     0.00    -0.02   397.18    -0.14   397.18     0.33     0.55
 HUB     13.07     0.00    -0.02   397.18    -0.14   397.18     0.33     0.49

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.20    47.36     8.84   593.09   713.91    10.22   597.90   529.59     2.82
 MEAN    52.38    44.80     7.58   515.17   650.61    10.22   597.90   529.59     2.82
 HUB     46.82    38.84     7.98   423.13   580.44    10.22   597.90   529.59     2.82

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   497.60   293.31   401.97  1209.09      0.41     2.05     1.78     7.43
 MEAN    15.50   500.27   288.55   408.67  1204.91      0.42     2.13     1.86     5.75
 HUB     12.59   531.57   331.24   415.75  1200.87      0.44     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    580.79   494.19   287.49     0.41  5264.41      0.92     0.91
 MEAN   501.72   460.93   213.18     0.38  4473.94      0.92     0.91     0.91     1.55
 HUB    407.59   422.70    76.35     0.35  4172.06      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.75     1.16    11.37   637.38     1.04   617.77   539.41     2.10
 MEAN    12.48     1.13    11.10   633.32     1.04   613.51   538.22     2.28
 HUB     12.37     1.12    10.84   631.78     1.04   609.41   538.08     2.46

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     36.12    35.57    31.50     4.07     0.93     0.45     1.40
 MEAN    35.22    27.55    23.50     4.05     0.93     0.43     1.64
 HUB     38.55    10.41     6.50     3.91     0.93     0.41     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   554.5460   293.8368   470.2991  1201.1766     0.4617    -0.1900     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.5048    10.8322   609.8520   539.1212     2.4759    31.9966    33.0000     1.0034
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   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth         Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   474.8077   108.4227   462.2628  1207.5350     0.3932     0.0952     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.4811    11.2404   616.3447   538.3982   410.5396     0.0366     0.3616

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   460.3365     0.0000   460.3365  1208.5339     0.3809     0.2867     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.3118   617.4219   538.7219     0.0000     0.0600     0.0369     0.1452

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8814    12.4805     1.1322   634.1583    23.7684   246.0739     1.9075

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 150369.172       0.446     549.505  601716.688   0.580845E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3149   Tt4 =   634.1583   T1  =   482.2690

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    952809.31   3481.9211    177.3912      2.4153      0.8671      5.6405      1.3149     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 72.7%   07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.996   EfDer =  0.999    SH =  0.697129E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     63.529    3679.978       5.167     482.269       1.000       1.000       0.980
  W Kg/sec =  28.877  Wdry =  63.485  WH2O = 0.044  lbm/sec   H2O =   0.300g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     174.270   3816.417       1.381       0.249      53.371      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 142065.313   49834.273       1.629     831.557     510.316     619.754       1.214

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   410.02    -0.14   410.02     0.39     0.74   687.05
 MEAN    17.06     0.00    -0.02   410.02    -0.14   410.02     0.39     0.65
 HUB     12.51     0.00    -0.02   410.02    -0.14   410.02     0.39     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.25    50.47     7.78   662.51   779.25     4.66   468.77   467.79    15.65
 MEAN    53.20    47.20     6.00   547.87   684.42     4.66   468.77   467.79    15.65
 HUB     44.43    38.62     5.81   401.74   574.13     4.66   468.77   467.79    15.65

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   647.40   375.12   527.65  1076.19      0.60     7.29     6.52    16.04
 MEAN    18.04   681.58   413.24   542.02  1070.54      0.64     7.43     6.80    12.53
 HUB     15.00   784.00   538.31   569.98  1060.69      0.74     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    662.51   600.84   287.39     0.56  7741.71      0.92     0.91
 MEAN   579.21   566.86   165.97     0.53  7455.56      0.92     0.91     0.91     1.34
 HUB    481.71   572.78    56.60     0.54  8076.43      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.73     1.30     5.29   522.18     1.08   488.54   491.94    10.35
 MEAN     6.67     1.29     5.09   520.71     1.08   483.42   491.96    12.33
 HUB      6.81     1.32     4.75   523.91     1.09   474.57   496.06    16.81

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.41    28.58    24.20     4.38     0.93     0.36     1.80
 MEAN    37.32    17.03    12.70     4.33     0.92     0.31     2.22
 HUB     43.36    -5.67    -9.30     3.63     0.92     0.17     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   720.2131   412.4341   590.4278  1067.4303     0.6747    -0.0723     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.7193     4.9712   480.6616   493.6881    14.0194    34.9356    35.4000     0.4644

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   560.1656   137.0336   543.1458  1085.5087     0.5160     0.3240     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.6914     5.5931   497.1010   490.9945   554.9116     0.0265     0.4329

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   555.8933     0.0000   555.8933  1085.8917     0.5119     0.3551     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.5919   497.4905   491.5688     0.0000     0.0600     0.0385     0.3233
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8785     6.6712     1.2911   522.2640    39.9973   216.7782     1.6805

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 249365.016       0.568     895.239  679214.250   0.120450E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.072   EfDer =  1.000    SH =  0.187530E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     63.529    3679.978       6.671     522.263       1.000       1.000       0.980
 W Kg/sec =  28.877  Wdry =  63.410  WH2O = 0.119  lbm/sec   H2O =   0.936g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    140.467    3667.400       1.379       0.250      53.409      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 122594.742   49811.160       1.435     590.487     411.620     468.502       1.138

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   498.25    -0.17   498.25     0.46     0.76   657.66
 MEAN    18.08     0.00    -0.02   498.25    -0.17   498.25     0.46     0.70
 HUB     15.21     0.00    -0.02   498.25    -0.17   498.25     0.46     0.64

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.95     46.36     6.59   659.94   827.04     5.79   502.41   493.10    12.92
 MEAN    49.37     42.30     7.07   580.56   765.18     5.79   502.41   493.10    12.92
 HUB     44.44     37.84     6.60   488.45   697.85     5.79   502.41   493.10    12.92

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   580.50   305.91   493.35  1117.92     0.52     2.33     2.04     9.02
 MEAN    18.01   594.82   317.97   502.70  1113.65     0.53     2.40     2.13     7.35
 HUB     15.22   647.16   394.92   512.69  1109.67     0.58     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    655.77   604.81   349.86     0.54  6250.16     0.92     0.91
 MEAN   578.37   566.14   260.40     0.51  5729.66     0.92     0.91     0.91     1.47
 HUB    488.87   521.23    93.95     0.47  6014.47     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.14     1.22     6.79   554.36     1.06   527.42   507.58     6.55
 MEAN     8.01     1.20     6.61   551.69     1.06   523.40   506.81     7.34
 HUB      8.08     1.21     6.44   553.15     1.06   519.66   508.30     8.15

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.80    35.34    31.50     3.84     0.93     0.40     1.40
 MEAN    32.31    27.38    23.50     3.88     0.93     0.39     1.63
 HUB     37.61    10.38     6.50     3.88     0.93     0.40     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   660.6901   318.8586   578.6541  1108.0347     0.5963    -0.1733     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.0624     6.3599   518.1830   508.6222     8.6296    28.8563    30.6000     1.7437

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   545.6069   115.6725   533.2042  1119.8324     0.4872     0.1629     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     8.0418     6.8523   529.2784   506.7252   491.5697     0.0241     0.3105

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   569.8785     0.0000   569.8785  1117.5144     0.5100     0.2199     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7343	527.1184	507.3477	0.0000	0.0600	0.0376	0.0822

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8804	8.0219	1.2025	553.0635	30.8035	244.2704	1.8936

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
192751.703	0.448	691.993	609614.500	0.220904E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.11183E-02 0.36965E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 7.271 EfDer = 1.000 SH = 0.263204E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.529	3679.978	8.022	553.061	1.000	1.000	0.980

W Kg/sec = 28.877 Wdry = 63.362 WH2O = 0.167 lbm/sec H2O = 1.518g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
120.209	3563.821	1.378	0.250	53.434	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
106114.883	49796.273	1.548	545.479	352.446	424.468	1.204

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	466.86	-0.16	466.86	0.41	0.71	624.16
MEAN	17.74	0.00	-0.02	466.86	-0.16	466.86	0.41	0.65	
HUB	15.05	0.00	-0.02	466.86	-0.16	466.86	0.41	0.60	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.09	46.36	7.73	644.53	795.98	7.14	535.68	507.01	6.80
MEAN	50.67	43.40	7.27	569.65	736.65	7.14	535.68	507.01	6.80
HUB	46.00	38.84	7.16	483.31	672.09	7.14	535.68	507.01	6.80

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	557.06	304.67	466.37	1150.95	0.48	2.26	1.98	8.75
MEAN	17.51	569.61	315.79	474.06	1147.10	0.50	2.34	2.07	6.78
HUB	14.85	618.78	387.61	482.34	1143.49	0.54	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	636.18	572.18	331.51	0.50	6038.75	0.92	0.91		
MEAN	562.20	534.28	246.41	0.47	5531.26	0.92	0.91	0.91	1.50
HUB	476.89	490.53	89.28	0.43	5758.42	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.62	1.20	8.22	583.98	1.06	559.23	519.48	3.89
MEAN	9.48	1.18	8.03	581.38	1.05	555.51	518.75	4.26
HUB	9.54	1.19	7.84	582.55	1.05	552.01	519.84	4.63

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.16	35.41	31.50	3.91	0.93	0.42	1.40
MEAN	33.67	27.46	23.50	3.96	0.93	0.41	1.62
HUB	38.79	10.49	6.50	3.99	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	627.7856	317.8630	541.3667	1142.6016	0.5494	-0.1590	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.5329	7.7875	551.2172	520.0337	4.7579	30.4193	31.5000	1.0807

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	521.8695	113.8423	509.3012	1152.6062	0.4528	0.1672	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.5150	8.2831	560.9141	518.6395	451.3937	0.0218	0.3344

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4        Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   532.1992     0.0000   532.1992  1151.6505     0.4621     0.2462     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2173   560.0192   518.8234     0.0000     0.0600     0.0370     0.1239

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8836     9.4919     1.1832   582.5888    29.5784   233.8314     1.8126

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 185566.375       0.459     666.197  584354.313   0.287630E-02

Melt Ratio at Stator LE, Throat, TE
0.45953E+00 0.55001E+00 0.79997E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 7.597   EfDer =  0.999    SH =  0.311732E-02

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     63.529    3679.978       9.492     582.574       1.000       1.000       0.980
 W Kg/sec =  28.877  Wdry =  63.331  WH2O = 0.198  lbm/sec   H2O =   2.049g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    104.270    3472.340       1.377       0.251      53.449      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  93091.844   49786.707       1.679     513.330     305.826     395.845       1.294

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   435.23    -0.15   435.23     0.38     0.65   583.60
 MEAN    16.97     0.00    -0.02   435.23    -0.15   435.23     0.38     0.60
 HUB     14.32     0.00    -0.02   435.23    -0.15   435.23     0.38     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     54.87    46.36     8.51   618.51   756.42     8.62   567.50   518.31     3.61
 MEAN    51.40    43.80     7.60   545.00   697.57     8.62   567.50   518.31     3.61
 HUB     46.59    37.84     8.75   459.87   633.28     8.62   567.50   518.31     3.61

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     18.88   527.60   295.51   437.08  1180.94      0.45     2.16     1.89     8.34
 MEAN    16.57   536.66   301.64   443.87  1177.19      0.46     2.24     1.97     6.35
 HUB     13.89   579.04   362.99   451.13  1173.62      0.49     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    606.31   536.32   310.80     0.45  5582.04      0.92     0.91
 MEAN   532.25   500.20   230.62     0.42  5001.82      0.92     0.91     0.91     1.52
 HUB    446.06   458.72    83.07     0.39  5044.12      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     11.14     1.17     9.73   611.10     1.05   588.95   529.08     2.40
 MEAN    10.96     1.15     9.52   608.14     1.04   585.21   528.21     2.59
 HUB     10.97     1.16     9.31   608.35     1.04   581.66   528.73     2.79

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.06    35.42    31.50     3.92     0.93     0.43     1.40
 MEAN    34.20    27.45    23.50     3.95     0.93     0.42     1.62
 HUB     38.82    10.43     6.50     3.93     0.93     0.42     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   577.0691   303.3323   490.9157  1174.5856     0.4913    -0.1109     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   11.0077     9.3570   582.7137   529.0629     2.7839    31.7115    32.4000     0.6885

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   485.4183   108.8651   473.0532  1182.3528     0.4106     0.1894     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.9937     9.8071   590.4616   528.2704   432.2457     0.0194     0.3552

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   481.4659     0.0000   481.4659  1182.6147     0.4071     0.2698     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.8024   590.7723   528.5637     0.0000     0.0600     0.0368     0.1863

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8814    10.9676     1.1555   609.1967    26.6244   236.6041     1.8341

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 167405.250       0.455     600.997  579407.750   0.374949E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.803   EfDer =  0.999    SH =  0.485137E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     63.529    3679.978      10.968     609.195       1.000       1.000       0.980
 W Kg/sec =  28.877  Wdry =  63.221  WH2O = 0.308  lbm/sec   H2O =   3.577g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     92.278    3395.663       1.375       0.252      53.506      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  82992.508   49752.402       1.881     509.668     270.942     384.739       1.420

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   390.77    -0.13   390.77     0.33     0.59   542.86
 MEAN   15.91     0.00    -0.02   390.77    -0.13   390.77     0.33     0.54
 HUB    13.07     0.00    -0.02   390.77    -0.13   390.77     0.33     0.48

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    56.41    47.36     9.05   588.33   706.39    10.19   597.11   529.33     2.94
 MEAN   52.60    44.80     7.80   511.03   643.42    10.19   597.11   529.33     2.94
 HUB    47.06    38.84     8.22   419.73   573.57    10.19   597.11   529.33     2.94

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   492.55   293.12   395.83  1208.06      0.41     2.05     1.78     7.43
 MEAN   15.50   494.76   287.88   402.38  1203.91      0.41     2.13     1.86     5.75
 HUB    12.59   525.28   329.24   409.29  1199.90      0.44     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   576.12   486.59   283.00     0.40  5261.10      0.92     0.91
 MEAN  497.69   453.79   209.81     0.38  4463.64      0.92     0.91     0.91     1.56
 HUB   404.31   416.12    75.07     0.35  4146.90      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    12.67     1.16    11.32   635.94     1.04   616.74   539.11     2.19
 MEAN   12.40     1.13    11.06   631.89     1.04   612.51   537.92     2.37
 HUB    12.29     1.12    10.80   630.28     1.03   608.44   537.75     2.56

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    36.52    35.56     31.50     4.06     0.93     0.46     1.40
 MEAN   35.58    27.54     23.50     4.04     0.93     0.43     1.64
 HUB    38.81    10.39      6.50     3.89     0.93     0.41     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   547.8172   293.1620   462.7740  1200.3093     0.4564    -0.1878     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.4277    10.8001   608.9862   538.8074     2.5771    32.3538    33.0000     0.6462
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   467.1801   106.6810   454.8367  1206.6514     0.3872     0.1043     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.4055    11.2075   615.4584   538.0750   410.5396     0.0359     0.3666

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   453.0406     0.0000   453.0406  1207.6102     0.3752     0.2922     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.2756   616.4940   538.4089     0.0000     0.0600     0.0367     0.1531

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8816    12.4043     1.1310   632.6986    23.5046   244.0947     1.8922

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 148747.703       0.448     534.016  591035.125   0.593610E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3119   Tt4 =   632.6986   T1  =   482.2688

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    943836.06   3388.4429    174.2700      2.4006      0.8685      5.9960      1.3119     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 69.9%   07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 6.347   EfDer =  1.000    SH =  0.709664E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     62.402    3650.005       5.167     482.269       1.000       1.000       0.980
  W Kg/sec =  28.365  Wdry =  62.358  WH2O = 0.044  lbm/sec   H2O =   0.307g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     171.180   3785.334       1.381       0.249      53.371      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 139114.016   48950.289       1.659     831.557     501.271     619.754       1.236

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   401.50    -0.14   401.50     0.38     0.73   681.46
 MEAN    17.06     0.00    -0.02   401.50    -0.14   401.50     0.38     0.64
 HUB     12.51     0.00    -0.02   401.50    -0.14   401.50     0.38     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.58    50.47     8.11   657.11   770.18      4.68   469.33   467.78    15.61
 MEAN    53.55    47.20     6.35   543.40   675.75      4.68   469.33   467.78    15.61
 HUB     44.79    38.62     6.17   398.47   565.77      4.68   469.33   467.78    15.61

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   638.73   375.98   516.34  1076.92      0.59     7.29     6.52    16.04
 MEAN    18.04   671.65   412.17   530.32  1071.27      0.63     7.43     6.80    12.53
 HUB     15.00   770.86   533.09   556.82  1061.70      0.73     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    657.11   587.92   281.13     0.55  7759.37      0.92     0.91
 MEAN   574.49   554.61   162.32     0.52  7436.21      0.92     0.91     0.91     1.36
 HUB    477.78   559.56    55.31     0.53  7998.08      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.72     1.30     5.31   521.95     1.08   489.20   491.79    10.34
 MEAN     6.65     1.29     5.12   520.29     1.08   484.08   491.70    12.30
 HUB      6.78     1.31     4.79   523.17     1.08   475.47   495.49    16.62

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     36.06    28.57    24.20     4.37     0.93     0.37     1.80
 MEAN    37.85    17.02    12.70     4.32     0.93     0.32     2.22
 HUB     43.75    -5.67    -9.30     3.63     0.93     0.18     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   708.6157   411.3665   576.9868  1068.3878     0.6633    -0.0698     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7005     5.0059   481.5294   493.3390    13.8940    35.4872    35.4000    -0.0872

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   548.1186   134.0865   531.4648  1086.1671     0.5046     0.3329     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6742     5.6217   497.7094   490.7397   554.9116     0.0260     0.4402

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   543.7916     0.0000   543.7916  1086.5460     0.5005     0.3635     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.6219   498.0950   491.3231     0.0000     0.0600     0.0371     0.3331
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8805     6.6560     1.2881   521.7999    39.5333   214.6261     1.6638

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 246490.078       0.571     869.225  665104.125   0.123270E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.423   EfDer =  0.999    SH =  0.192211E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     62.402    3650.005       6.656     521.799       1.000       1.000       0.980
 W Kg/sec =  28.365  Wdry =  62.282  WH2O = 0.120  lbm/sec   H2O =   0.962g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    138.230    3639.147       1.379       0.250      53.411      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 120097.188   48926.922       1.458     590.487     405.076     468.502       1.157

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   488.09    -0.17   488.09     0.45     0.75   652.60
 MEAN    18.08     0.00    -0.02   488.09    -0.17   488.09     0.45     0.69
 HUB     15.21     0.00    -0.02   488.09    -0.17   488.09     0.45     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.30     46.36     6.94   654.56   816.65     5.81   502.75   492.91    13.12
 MEAN    49.72     42.30     7.42   575.83   754.99     5.81   502.75   492.91    13.12
 HUB     44.80     37.84     6.96   484.47   687.83     5.81   502.75   492.91    13.12

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   573.33   307.42   483.94  1118.01      0.51     2.33     2.04     9.02
 MEAN    18.01   586.98   318.39   493.12  1113.72      0.53     2.40     2.13     7.35
 HUB     15.22   638.20   392.87   502.94  1109.71      0.58     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    650.42   593.17   343.00     0.53  6281.01      0.92     0.91
 MEAN   573.66   555.28   255.27     0.50  5737.21      0.92     0.91     0.91     1.48
 HUB    484.89   511.29    92.02     0.46  5983.23      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.12     1.22     6.80   553.79     1.06   527.51   507.42     6.71
 MEAN     7.98     1.20     6.62   551.02     1.06   523.47   506.59     7.51
 HUB      8.04     1.21     6.45   552.27     1.06   519.71   507.98     8.35

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.43    35.33    31.50     3.83     0.93     0.41     1.40
 MEAN    32.85    27.37    23.50     3.87     0.93     0.39     1.63
 HUB     38.00    10.37     6.50     3.87     0.93     0.40     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   650.5066   319.2825   566.7605  1108.4163     0.5869    -0.1689     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.0335     6.3829   518.5479   508.3386     8.7590    29.3946    30.6000     1.2054

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   534.6313   113.3456   522.4781  1120.0807     0.4773     0.1745     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.0146     6.8724   529.5222   506.4642   491.5697     0.0233     0.3181

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   558.0699     0.0000   558.0699  1117.8868     0.4992     0.2282     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7596	527.4786	507.0648	0.0000	0.0600	0.0371	0.0953

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8812	7.9950	1.2012	552.3557	30.5604	241.2023	1.8698

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
191259.109	0.452	674.458	596758.250	0.226139E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.22866E-02 0.45120E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 7.570 EfDer = 0.999 SH = 0.268747E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
62.402	3650.005	7.995	552.353	1.000	1.000	0.980

W Kg/sec = 28.365 Wdry = 62.235 WH2O = 0.168 lbm/sec H2O = 1.551g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
118.400	3537.058	1.378	0.250	53.435	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
104134.664	48912.129	1.571	545.479	347.154	424.468	1.223

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	458.15	-0.16	458.15	0.41	0.70	619.48
MEAN	17.74	0.00	-0.02	458.15	-0.16	458.15	0.41	0.65	
HUB	15.05	0.00	-0.02	458.15	-0.16	458.15	0.41	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.38	46.36	8.02	639.28	786.63	7.15	535.61	506.78	6.97
MEAN	50.97	43.40	7.57	565.01	727.54	7.15	535.61	506.78	6.97
HUB	46.31	38.84	7.47	479.38	663.22	7.15	535.61	506.78	6.97

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	550.68	305.44	458.20	1150.61	0.48	2.26	1.98	8.75
MEAN	17.51	562.64	315.65	465.76	1146.76	0.49	2.34	2.07	6.78
HUB	14.85	610.80	385.38	473.88	1143.13	0.53	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	630.99	562.08	325.55	0.49	6053.94	0.92	0.91		
MEAN	557.62	524.87	241.98	0.46	5528.72	0.92	0.91	0.91	1.50
HUB	473.01	481.92	87.63	0.42	5725.21	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.58	1.20	8.21	583.10	1.06	558.91	519.23	4.00
MEAN	9.44	1.18	8.02	580.43	1.05	555.18	518.47	4.38
HUB	9.49	1.19	7.84	581.43	1.05	551.68	519.49	4.77

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.69	35.39	31.50	3.89	0.93	0.42	1.40
MEAN	34.13	27.45	23.50	3.95	0.93	0.41	1.62
HUB	39.12	10.48	6.50	3.98	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	619.0922	317.7199	531.3467	1142.4684	0.5419	-0.1559	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4875	7.7923	551.0970	519.7184	4.8757	30.8774	31.5000	0.6226

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	512.3386	111.7632	499.9998	1152.3909	0.4446	0.1771	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4707	8.2849	560.7137	518.3263	451.3937	0.0213	0.3408

```
    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   522.3647     0.0000   522.3647  1151.4767     0.4536     0.2532     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2215   559.8590   518.5056     0.0000     0.0600     0.0367     0.1343

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8840     9.4479     1.1817   581.5986    29.2974   231.3744     1.7936

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 183834.125       0.462     648.275  572796.313   0.293337E-02

Melt Ratio at Stator LE, Throat, TE
0.47454E+00 0.56629E+00 0.81956E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 7.848   EfDer =  0.999    SH =  0.317561E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     62.402    3650.005       9.448     581.583       1.000       1.000       0.980
 W Kg/sec =  28.365  Wdry =  62.204  WH2O = 0.198  lbm/sec   H2O =   2.086g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    102.810    3446.990       1.377       0.251      53.451      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  91505.820   48902.680       1.702     513.330     301.553     395.845       1.313

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   427.81    -0.15   427.81     0.37     0.65   579.34
 MEAN    16.97     0.00    -0.02   427.81    -0.15   427.81     0.37     0.60
 HUB     14.32     0.00    -0.02   427.81    -0.15   427.81     0.37     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.12    46.36     8.76   613.48   748.03     8.61   567.02   518.02     3.73
 MEAN    51.65    43.80     7.85   540.56   689.48     8.61   567.02   518.02     3.73
 HUB     46.84    37.84     9.00   456.13   625.47     8.61   567.02   518.02     3.73

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   521.90   295.66   430.08  1180.20     0.44     2.16     1.89     8.34
 MEAN    16.57   530.46   301.10   436.72  1176.46     0.45     2.24     1.97     6.35
 HUB     13.89   571.96   360.76   443.84  1172.90     0.49     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    601.37   527.66   305.71     0.45  5584.87     0.92     0.91
 MEAN   527.92   492.11   226.81     0.42  4992.92     0.92     0.91     0.91     1.53
 HUB    442.43   451.29    81.67     0.38  5013.04     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     11.08     1.17     9.70   609.89     1.05   588.21   528.78     2.49
 MEAN    10.89     1.15     9.50   606.89     1.04   584.49   527.89     2.70
 HUB     10.90     1.15     9.29   606.99     1.04   580.96   528.37     2.91

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.51    35.41    31.50     3.91     0.93     0.43     1.40
 MEAN    34.58    27.45    23.50     3.95     0.93     0.42     1.62
 HUB     39.10    10.43     6.50     3.93     0.93     0.43     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   569.8755   302.7946   482.7769  1173.9587     0.4854    -0.1092     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.9422     9.3366   582.1017   528.7291     2.8872    32.0957    32.4000     0.3043

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   477.4150   107.0702   465.2538  1181.6843     0.4040     0.1974     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.9290     9.7842   589.8046   527.9285   432.2457     0.0191     0.3606

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   473.5384     0.0000   473.5384  1181.9358     0.4006     0.2756     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.7791   590.1042   528.2288     0.0000     0.0600     0.0366     0.1939

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8814    10.9033     1.1540   607.9230    26.3413   234.5055     1.8179

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 165659.844       0.458     584.185  568581.500   0.383130E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 8.008   EfDer =  0.998    SH =  0.495408E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     62.402    3650.005      10.903     607.922       1.000       1.000       0.980
 W Kg/sec =  28.365  Wdry =  62.093  WH2O = 0.309  lbm/sec   H2O =   3.644g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     91.080    3371.532       1.374       0.252      53.509      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  81707.961   48868.113       1.906     509.668     267.441     384.739       1.439

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   384.72    -0.13   384.72     0.32     0.59   539.00
 MEAN   15.91     0.00    -0.02   384.72    -0.13   384.72     0.32     0.54
 HUB    13.07     0.00    -0.02   384.72    -0.13   384.72     0.32     0.48

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    56.61    47.36     9.25   583.53   699.05    10.15   596.21   529.03     3.06
 MEAN   52.81    44.80     8.01   506.87   636.44    10.15   596.21   529.03     3.06
 HUB    47.27    38.84     8.43   416.31   566.95    10.15   596.21   529.03     3.06

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   487.63   292.64   390.06  1206.91     0.40     2.05     1.78     7.43
 MEAN   15.50   489.41   286.97   396.45  1202.80     0.41     2.13     1.86     5.75
 HUB    12.59   519.20   327.10   403.20  1198.83     0.43     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   571.43   479.45   278.79     0.40  5252.35     0.92     0.91
 MEAN  493.63   447.08   206.66     0.37  4449.45     0.92     0.91     0.91     1.57
 HUB   401.02   409.92    73.92     0.34  4119.91     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    12.58     1.15    11.27   634.40     1.04   615.58   538.77     2.29
 MEAN   12.31     1.13    11.01   630.35     1.04   611.40   537.57     2.48
 HUB    12.21     1.12    10.75   628.69     1.03   607.36   537.38     2.68

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    36.88    35.56    31.50     4.06     0.93     0.46     1.40
 MEAN   35.90    27.53    23.50     4.03     0.93     0.43     1.64
 HUB    39.05    10.39     6.50     3.89     0.93     0.42     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   541.3615   292.2320   455.7111  1199.3174     0.4514    -0.1859     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.3398    10.7561   607.9933   538.4520     2.6853    32.6707    33.0000     0.3293
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   460.0562   105.0542   447.9010  1205.6288     0.3816     0.1122     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.3188    11.1613   614.4297   537.7109   410.5396     0.0354     0.3710

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   446.2201     0.0000   446.2201  1206.5515     0.3698     0.2969     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.2262   615.4276   538.0544     0.0000     0.0600     0.0366     0.1600

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8815    12.3172     1.1297   631.1430    23.2227   242.3544     1.8787

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 147008.063       0.450     518.411  580591.438   0.605940E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3087   Tt4 =   631.1430   T1  =   482.2687

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    934251.19   3294.5532    171.1796      2.3837      0.8695      6.3475      1.3087     37.3740
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10µm, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.970   EfDer =  0.985    SH =  0.992751E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     75.525    3889.388       5.167    462.090       1.000       1.000       0.980
  W Kg/sec =  34.329  Wdry =  75.517  WH2O = 0.007  lbm/sec   H2O =   0.043g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    202.792    4120.723       1.381       0.248      53.352      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 167381.375   59258.020       1.401     831.557     593.615     619.754       1.044

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   483.09    -0.17   483.09     0.47     0.83   741.83
 MEAN    17.06     0.00    -0.02   483.09    -0.17   483.09     0.47     0.74
 HUB     12.51     0.00    -0.02   483.09    -0.17   483.09     0.47     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.40     50.47     4.93   700.21   850.82     4.45   443.32   453.00     7.19
 MEAN    50.17     47.20     2.97   579.04   754.23     4.45   443.32   453.00     7.19
 HUB     41.32     38.62     2.70   424.61   643.28     4.45   443.32   453.00     7.19

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   725.65   355.06   632.85  1044.10      0.69     7.29     6.52    16.04
 MEAN    18.04   770.38   412.57   650.59  1038.69      0.74     7.43     6.80    12.53
 HUB     15.00   909.15   579.42   700.59  1024.99      0.89     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    700.21   720.85   345.15     0.69  7328.26      0.92     0.90
 MEAN   612.17   680.51   199.59     0.66  7444.04      0.92     0.90     0.90     1.21
 HUB    509.12   704.11    70.30     0.69  8693.33      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.78     1.31     4.93   502.09     1.09   459.75   479.29     4.53
 MEAN     6.81     1.32     4.75   502.73     1.09   455.00   479.96     5.46
 HUB      7.12     1.38     4.29   509.55     1.10   443.08   485.22     8.91

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.29    28.61    24.20     4.41     0.93     0.27     1.80
 MEAN    32.38    17.06    12.70     4.36     0.91     0.22     2.22
 HUB     39.59    -5.73    -9.30     3.57     0.91     0.07     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.985       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   831.8768   411.7729   722.8154  1031.9886     0.8061    -0.1057     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.8832     4.5086   449.1398   481.6946     7.1449    29.6693    35.4000     5.7307

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   676.8344   165.5743   656.2697  1053.3680     0.6425     0.2318     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.8131     5.1777   467.9523   480.4142   554.9116     0.0412     0.3616

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   678.2740     0.0000   678.2740  1053.1658     0.6440     0.2576     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.1204	467.8000	480.4042	0.0000	0.0600	0.0711	0.2063

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8264	6.7458	1.3055	504.7875	42.6995	237.2524	1.8392

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
265523.625	0.542	1133.245	862723.750	0.148003E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.618 EfDer = 0.990 SH = 0.214637E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
75.525	3889.388	6.746	504.787	1.000	1.000	0.980

W Kg/sec = 34.329 Wdry = 75.508 WH2O = 0.016 lbm/sec H2O = 0.107g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
162.355	3942.621	1.381	0.249	53.355	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
146256.797	59255.340	1.242	590.487	475.290	468.502	0.986

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	594.45	-0.20	594.45	0.56	0.86	707.02
MEAN	18.08	0.00	-0.02	594.45	-0.20	594.45	0.56	0.80	
HUB	15.21	0.00	-0.02	594.45	-0.20	594.45	0.56	0.74	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.57	46.36	3.21	697.49	916.60	5.47	476.39	480.48	4.04
MEAN	45.92	42.30	3.62	613.60	854.47	5.47	476.39	480.48	4.04
HUB	40.98	37.84	3.14	516.25	787.46	5.47	476.39	480.48	4.04

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	646.16	276.83	583.85	1091.06	0.59	2.33	2.04	9.02
MEAN	18.01	665.82	301.77	593.51	1087.51	0.61	2.40	2.13	7.35
HUB	15.22	726.86	404.15	604.15	1084.32	0.67	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	693.08	717.04	416.25	0.66	5657.08	0.92	0.91		
MEAN	611.28	669.37	309.51	0.62	5438.58	0.92	0.91	0.91	1.37
HUB	516.69	614.54	112.54	0.57	6155.52	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.20	1.22	6.49	535.65	1.06	502.09	496.15	1.78
MEAN	8.14	1.21	6.34	534.46	1.06	498.83	495.67	1.97
HUB	8.34	1.24	6.19	538.37	1.07	495.91	497.75	2.16

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.37	35.49	31.50	3.99	0.93	0.33	1.40
MEAN	26.95	27.54	23.50	4.04	0.92	0.32	1.63
HUB	33.78	10.55	6.50	4.05	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.990	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	762.4059	302.6180	699.7750	1077.2028	0.7078	-0.2337	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2085	5.8991	489.4503	496.9626	2.7133	23.3861	30.6000	7.2139

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	658.0977	139.5214	643.1379	1090.2357	0.6036	0.0268	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.1503	6.3904	501.3551	496.3201	491.5697	0.0408	0.2244

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	699.8377	0.0000	699.8377	1085.2544	0.6449	0.1032	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.1373	496.8038	496.4650	0.0000	0.0600	0.0724	-0.1073

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8276	8.0907	1.1994	536.1587	31.3734	279.3031	2.1651

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
195233.063	0.406	833.248	780500.875	0.249548E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.991 EfDer = 0.992 SH = 0.307016E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
75.525	3889.388	8.091	536.158	1.000	1.000	0.980

W Kg/sec = 34.329 Wdry = 75.501 WH2O = 0.023 lbm/sec H2O = 0.177g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
139.510	3825.540	1.381	0.249	53.358	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
125909.281	59253.191	1.335	545.479	408.452	424.468	1.039

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	553.97	-0.19	553.97	0.50	0.80	670.00
MEAN	17.74	0.00	-0.02	553.97	-0.19	553.97	0.50	0.74	
HUB	15.05	0.00	-0.02	553.97	-0.19	553.97	0.50	0.68	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.89	46.36	4.53	681.20	878.17	6.82	511.51	496.15	1.77
MEAN	47.39	43.40	3.99	602.07	818.29	6.82	511.51	496.15	1.77
HUB	42.69	38.84	3.85	510.82	753.67	6.82	511.51	496.15	1.77

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	616.71	279.84	549.57	1127.07	0.55	2.26	1.98	8.75
MEAN	17.51	634.45	302.54	557.67	1123.77	0.56	2.34	2.07	6.78
HUB	14.85	692.17	397.56	566.60	1120.77	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	672.38	675.36	392.54	0.60	5547.44	0.92	0.91		
MEAN	594.20	629.33	291.65	0.56	5299.88	0.92	0.91	0.91	1.40
HUB	504.03	576.52	106.47	0.51	5906.65	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.70	1.20	7.93	566.41	1.06	535.86	509.54	0.95
MEAN	9.62	1.19	7.77	565.06	1.05	532.72	509.04	1.03
HUB	9.81	1.21	7.61	568.37	1.06	529.88	510.59	1.11

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.99	35.54	31.50	4.04	0.93	0.34	1.40
MEAN	28.48	27.61	23.50	4.11	0.92	0.34	1.62
HUB	35.06	10.64	6.50	4.14	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	714.9573	304.5287	646.8587	1116.1420	0.6406	-0.2030	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.6897	7.3767	525.5596	509.9667	1.2775	25.2102	31.5000	6.2898

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	623.9691	136.1146	608.9419	1126.4917	0.5539	0.0408	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.6428	7.8487	535.3418	509.5646	451.3937	0.0342	0.2571

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	640.6728	0.0000	640.6728	1124.6827	0.5696	0.1490	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.7213	533.6492	509.5974	0.0000	0.0600	0.0583	-0.0249

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8481	9.5960	1.1860	566.6084	30.4516	264.8798	2.0533

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
189619.953	0.419	809.291	738172.375	0.368941E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.70166E-02

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 4.572 EfDer = 0.995 SH = 0.459095E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
75.525	3889.388	9.596	566.608	1.000	1.000	0.980

W Kg/sec = 34.329 Wdry = 75.490 WH2O = 0.035 lbm/sec H2O = 0.305g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
120.921	3721.328	1.380	0.249	53.363	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
109526.742	59249.656	1.450	513.330	354.077	395.845	1.118

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	512.07	-0.18	512.07	0.45	0.73	625.44
MEAN	16.97	0.00	-0.02	512.07	-0.18	512.07	0.45	0.68	
HUB	14.32	0.00	-0.02	512.07	-0.18	512.07	0.45	0.62	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.93	46.36	5.57	653.71	830.53	8.36	545.56	509.49	1.01
MEAN	48.37	43.80	4.57	576.01	770.85	8.36	545.56	509.49	1.01
HUB	43.52	37.84	5.68	486.04	706.13	8.36	545.56	509.49	1.01

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	580.69	275.91	510.95	1160.21	0.50	2.16	1.89	8.34
MEAN	16.57	594.93	291.74	518.49	1156.74	0.51	2.24	1.97	6.35
HUB	13.89	645.51	373.24	526.66	1153.53	0.56	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	640.81	627.88	364.90	0.54	5212.59	0.92	0.91		
MEAN	562.54	584.95	270.80	0.51	4838.18	0.92	0.91	0.91	1.42
HUB	471.44	535.74	98.20	0.46	5186.89	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.28	1.18	9.53	595.00	1.05	567.94	520.79	0.62
MEAN	11.16	1.16	9.33	592.97	1.05	564.56	520.07	0.67
HUB	11.27	1.17	9.14	594.86	1.05	561.42	520.92	0.72

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	28.37	35.53	31.50	4.03	0.93	0.36	1.40
MEAN	29.36	27.58	23.50	4.08	0.92	0.36	1.62
HUB	35.33	10.56	6.50	4.06	0.92	0.38	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	647.9975	293.3762	577.7813	1152.6129	0.5622	-0.1357	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
11.2183	9.0768	560.5861	520.6871	0.7386	26.9198	32.4000	5.4802

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   572.7350   128.4477   558.1456  1160.1666     0.4937     0.0807     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    11.1838    9.4880   567.9557   520.4297   432.2457     0.0281     0.2865

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   568.1506     0.0000   568.1506  1160.5651     0.4895     0.1900     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.4836   568.3731   520.3835     0.0000     0.0600     0.0467     0.0784

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8639    11.1484     1.1618   594.2686    27.6706   265.2646     2.0563

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 172458.281       0.420     736.046  723347.750   0.514815E-03

Melt Ratio at Stator LE, Throat, TE
0.12546E+00 0.15061E+00 0.21800E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.157   EfDer =  0.997    SH =  0.580843E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     75.525    3889.388      11.148     594.265       1.000       1.000       0.980
 W Kg/sec =  34.329  Wdry =  75.481  WH2O = 0.044  lbm/sec   H2O =   0.438g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    106.592    3633.691       1.380       0.249      53.367      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  96417.633   59246.820       1.633     509.668     312.166     384.739       1.232

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   454.02    -0.16   454.02     0.39     0.66   580.91
 MEAN    15.91     0.00    -0.02   454.02    -0.16   454.02     0.39     0.60
 HUB     13.07     0.00    -0.02   454.02    -0.16   454.02     0.39     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.87    47.36     6.51   621.80   770.05    10.06   577.74   520.29     0.59
 MEAN    49.96    44.80     5.16   540.11   705.71    10.06   577.74   520.29     0.59
 HUB     44.35    38.84     5.51   443.61   634.88    10.06   577.74   520.29     0.59

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   536.37   280.99   456.88  1191.02      0.45     2.05     1.78     7.43
 MEAN    15.50   543.91   282.64   464.70  1186.78      0.46     2.13     1.86     5.75
 HUB     12.59   582.32   339.69   472.97  1182.75      0.49     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    608.91   562.37   327.91     0.47  5043.87     0.92     0.91
 MEAN   526.01   524.57   243.37     0.44  4382.76     0.92     0.91     0.91     1.47
 HUB    427.32   481.02    87.63     0.41  4278.71     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.95     1.16    11.29   621.72     1.05   598.65   530.38     0.39
 MEAN    12.70     1.14    11.02   618.12     1.04   594.39   529.14     0.42
 HUB     12.67     1.14    10.76   617.55     1.04   590.36   529.01     0.46

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.59    35.67    31.50     4.17     0.93     0.40     1.40
 MEAN    31.31    27.64    23.50     4.14     0.92     0.38     1.64
 HUB     35.69    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   610.7081   287.8249   538.6291  1181.5527     0.5169    -0.2161     2.0437
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    Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
   12.7390    10.6427    589.2258    529.5770     0.4728    28.1185     33.0000     4.8815

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth         Cuth        Cmth       Aoth          Machth     cp 2-Th     Stat Chord
   15.2185    545.8027    124.6345    531.3820   1187.5718     0.4596     -0.0141     2.1315

   BlockageTh  PtTh       PsTh       TsTh       TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     12.6874    10.9976    595.2393    529.3515   410.5396     0.0495     0.3067

    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4        Ao4           Mach4      cp 3-4   Stator Gap
   14.7013    527.5016     0.0000    527.5016   1189.1055     0.4436     0.2236     0.5109

   Blockage4   Ps4       Ts4        TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     11.1115    596.8058    529.3508     0.0000     0.0600     0.0447     0.0509

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
    0.8712     12.6958      1.1388    619.1097    24.8628   269.5066     2.0892

Del Enthalpy   Del_H/U^2    GHP       Reynolds#        SH
 155091.875        0.418     661.926  728826.063   0.622990E-03

Melt Ratio at Stator LE, Throat, TE
0.44757E+00 0.48127E+00 0.57739E+00
 trTOT =     1.3398   Tt4 =    619.1097   T1  =   462.0901

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP         MassFloS1cor   OPR         Efficiency  Rotor1Inc    TR       AxHubLen
    977926.75   4173.7559     202.7916      2.4570       0.8275      2.9703      1.3398     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 75.6%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.336   EfDer =  0.998    SH =  0.113169E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     66.638    3627.044       5.167     462.089       1.000       1.000       0.980
  W Kg/sec =  30.290  Wdry =  66.631  WH2O = 0.008  lbm/sec   H2O =   0.051g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    178.931    3842.775       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 143417.094   52285.305       1.588     831.557     523.775     619.754       1.183

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1       CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   413.92    -0.14   413.92      0.40     0.75   691.80
 MEAN    17.06     0.00    -0.02   413.92    -0.14   413.92      0.40     0.66
 HUB     12.51     0.00    -0.02   413.92    -0.14   413.92      0.40     0.56

        BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.64    50.47     7.17   652.98   773.24      4.63   448.31   452.94     6.64
 MEAN    52.54    47.20     5.34   539.99   680.49      4.63   448.31   452.94     6.64
 HUB     43.74    38.62     5.12   395.97   572.92      4.63   448.31   452.94     6.64

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   645.60   361.64   534.81  1051.80      0.61     7.29     6.52    16.04
 MEAN    18.04   680.94   402.67   549.12  1046.40      0.65     7.43     6.80    12.53
 HUB     15.00   786.17   532.25   578.59  1036.44      0.76     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    652.98   609.01   291.33     0.58  7463.66      0.92     0.91
 MEAN   570.88   574.31   168.21     0.55  7264.94      0.92     0.91     0.91     1.31
 HUB    474.78   581.44    57.47     0.56  7985.50      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.72     1.30     5.22   500.08     1.08   466.57   478.00     4.13
 MEAN     6.67     1.29     5.04   499.07     1.08   461.78   477.62     4.96
 HUB      6.84     1.32     4.69   502.74     1.09   453.04   480.46     7.00

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.07    28.58    24.20     4.38     0.93     0.34     1.80
 MEAN    36.25    17.03    12.70     4.33     0.92     0.29     2.22
 HUB     42.61    -5.67    -9.30     3.63     0.92     0.15     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   721.6682   401.8846   599.4111  1042.9557     0.6919    -0.0773     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7238     4.8999   458.7552   478.7779     5.7671    33.8405    35.4000     1.5595

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   568.4388   139.0575   551.1675  1060.8596     0.5358     0.3041     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6926     5.5176   474.6507   478.0067   554.9116     0.0278     0.4170

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   564.4474     0.0000   564.4474  1061.2411     0.5319     0.3361     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5128   475.0165   478.0653     0.0000     0.0600     0.0416     0.3014
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8742     6.6682     1.2905   500.6279    38.5410   221.1329     1.7142

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 239701.516       0.562     902.664  739206.250   0.180011E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.317   EfDer =  1.000    SH =  0.271468E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     66.638    3627.044       6.668     500.627       1.000       1.000       0.980
 W Kg/sec =  30.290  Wdry =  66.620  WH2O = 0.018  lbm/sec   H2O =   0.140g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    144.321    3691.930       1.381       0.249      53.357      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 124084.586   52282.055       1.398     590.487     422.512     468.502       1.109

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   504.33    -0.17   504.33     0.47     0.77   662.06
 MEAN    18.08     0.00    -0.02   504.33    -0.17   504.33     0.47     0.71
 HUB     15.21     0.00    -0.02   504.33    -0.17   504.33     0.47     0.65

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.22     46.36     5.86   650.45   823.20     5.73   480.19   478.33     4.55
 MEAN    48.62     42.30     6.32   572.21   762.87     5.73   480.19   478.33     4.55
 HUB     43.68     37.84     5.84   481.43   697.34     5.73   480.19   478.33     4.55

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   578.58   291.76   499.64  1093.17     0.53     2.33     2.04     9.02
 MEAN    18.01   593.79   306.28   508.71  1089.17     0.55     2.40     2.13     7.35
 HUB     15.22   646.70   386.59   518.43  1085.46     0.60     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    646.33   612.67   354.58     0.56  5961.23     0.92     0.91
 MEAN   570.05   573.02   263.77     0.53  5519.20     0.92     0.91     0.91     1.44
 HUB    481.84   527.11    95.25     0.49  5887.67     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.11     1.22     6.72   530.95     1.06   504.05   494.26     2.17
 MEAN     7.99     1.20     6.55   528.70     1.06   500.37   493.25     2.44
 HUB      8.09     1.21     6.38   530.58     1.06   496.97   494.38     2.71

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     30.28    35.36    31.50     3.86     0.93     0.38     1.40
 MEAN    31.05    27.41    23.50     3.91     0.93     0.37     1.63
 HUB     36.71    10.41     6.50     3.91     0.93     0.38     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   662.7843   307.1380  587.3239  1083.0392     0.6120    -0.1833     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.0482     6.2693   494.7835   494.2203     2.9519    27.6071    30.6000     2.9929

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   554.1271   117.4789   541.5308  1094.6072     0.5062     0.1340     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.0239     6.7508   505.4062   493.7289   491.5697     0.0260     0.2916

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   579.6560     0.0000   579.6560  1092.0671     0.5308     0.1976     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6208	503.0830	493.8462	0.0000	0.0600	0.0404	0.0483

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8769	8.0021	1.2000	530.0750	29.4492	251.5323	1.9499

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
183298.406	0.439	690.262	664102.813	0.315863E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.514 EfDer = 1.000 SH = 0.386610E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
66.638	3627.044	8.002	530.075	1.000	1.000	0.980

W Kg/sec = 30.290 Wdry = 66.612 WH2O = 0.026 lbm/sec H2O = 0.231g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
123.751	3587.916	1.381	0.249	53.361	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
107436.227	52279.695	1.505	545.479	362.331	424.468	1.171

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	472.69	-0.16	472.69	0.43	0.72	628.38
MEAN	17.74	0.00	-0.02	472.69	-0.16	472.69	0.43	0.67	
HUB	15.05	0.00	-0.02	472.69	-0.16	472.69	0.43	0.61	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.35	46.36	6.99	635.25	791.96	7.06	512.13	493.75	2.25
MEAN	49.91	43.40	6.51	561.46	734.07	7.06	512.13	493.75	2.25
HUB	45.23	38.84	6.39	476.36	671.20	7.06	512.13	493.75	2.25

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	554.82	290.99	472.39	1125.80	0.49	2.26	1.98	8.75
MEAN	17.51	568.30	304.43	479.88	1122.19	0.51	2.34	2.07	6.78
HUB	14.85	618.14	379.48	487.94	1118.81	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	627.02	579.71	336.03	0.51	5767.82	0.92	0.91		
MEAN	554.12	540.95	249.68	0.48	5332.43	0.92	0.91	0.91	1.47
HUB	470.03	496.28	90.55	0.44	5637.70	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.57	1.20	8.12	559.40	1.06	534.68	507.24	1.27
MEAN	9.45	1.18	7.95	557.18	1.05	531.25	506.34	1.39
HUB	9.53	1.19	7.77	558.73	1.05	528.05	507.18	1.52

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.63	35.43	31.50	3.93	0.93	0.40	1.40
MEAN	32.39	27.49	23.50	3.99	0.93	0.39	1.62
HUB	37.87	10.51	6.50	4.01	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	628.8948	306.4286	549.1904	1117.3187	0.5629	-0.1673	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.5007	7.6830	526.6835	507.0936	1.6042	29.1600	31.5000	2.3400

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	529.8723	115.5881	517.1112	1127.0500	0.4701	0.1389	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4800	8.1639	535.8956	506.7414	451.3937	0.0232	0.3154

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	540.7592	0.0000	540.7592	1126.0417	0.4802	0.2249	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.0918	534.9619	506.7916	0.0000	0.0600	0.0385	0.0930

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8801	9.4560	1.1817	558.4355	28.3628	240.6169	1.8652

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
176659.891	0.449	665.263	635483.250	0.457410E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.46434E-03 0.18240E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.839 EfDer = 1.000 SH = 0.552736E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
66.638	3627.044	9.456	558.435	1.000	1.000	0.980

W Kg/sec = 30.290 Wdry = 66.601 WH2O = 0.037 lbm/sec H2O = 0.376g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
107.489	3495.622	1.380	0.249	53.366	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
94268.719	52276.281	1.631	513.330	314.764	395.845	1.258

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	440.74	-0.15	440.74	0.39	0.66	587.51
MEAN	16.97	0.00	-0.02	440.74	-0.15	440.74	0.39	0.61	
HUB	14.32	0.00	-0.02	440.74	-0.15	440.74	0.39	0.56	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.14	46.36	7.78	609.62	752.37	8.53	542.85	506.77	1.35
MEAN	50.64	43.80	6.84	537.16	694.94	8.53	542.85	506.77	1.35
HUB	45.81	37.84	7.97	453.26	632.32	8.53	542.85	506.77	1.35

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	525.23	282.53	442.77	1155.55	0.45	2.16	1.89	8.34
MEAN	16.57	535.34	290.89	449.42	1151.99	0.46	2.24	1.97	6.35
HUB	13.89	578.56	355.38	456.55	1148.61	0.50	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	597.59	543.42	315.06	0.47	5337.00	0.92	0.91		
MEAN	524.59	506.55	233.71	0.44	4823.72	0.92	0.91	0.91	1.49
HUB	439.65	464.26	84.26	0.40	4938.44	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.07	1.17	9.63	585.54	1.05	563.41	518.00	0.85
MEAN	10.91	1.15	9.43	582.93	1.04	559.94	517.02	0.93
HUB	10.94	1.16	9.22	583.52	1.04	556.66	517.37	1.00

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.54	35.43	31.50	3.93	0.93	0.41	1.40
MEAN	32.91	27.48	23.50	3.98	0.93	0.40	1.62
HUB	37.90	10.46	6.50	3.96	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	577.2064	292.5242	497.5910	1149.1910	0.5023	-0.1163	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.9587	9.2450	557.2703	517.5410	0.9949	30.4505	32.4000	1.9496

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	492.6031	110.4765	480.0549	1156.6479	0.4259	0.1616	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.9426     9.6753   564.5286   517.2951   432.2457     0.0204     0.3363

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   488.5454     0.0000   488.5454  1156.9438     0.4223     0.2488     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6714   564.8441   517.2673     0.0000     0.0600     0.0379     0.1591

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8812    10.9154     1.1543   583.9861    25.5622   243.5052     1.8876

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 159357.484       0.446     600.106  629206.250   0.613922E-03

Melt Ratio at Stator LE, Throat, TE
0.14301E+00 0.17047E+00 0.24355E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.085   EfDer =  1.000    SH =  0.685380E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     66.638    3627.044      10.915     583.983       1.000       1.000       0.980
 W Kg/sec =  30.290  Wdry =  66.593  WH2O = 0.046  lbm/sec   H2O =   0.524g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     95.223    3418.296       1.380       0.249      53.371      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  83937.172   52273.559       1.828     509.668     278.886     384.739       1.380

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   395.25    -0.14   395.25     0.34     0.60   546.47
 MEAN    15.91     0.00    -0.02   395.25    -0.14   395.25     0.34     0.55
 HUB     13.07     0.00    -0.02   395.25    -0.14   395.25     0.34     0.49

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.73    47.36     8.37   579.86   701.87    10.09   571.46   517.22     0.83
 MEAN    51.88    44.80     7.08   503.68   640.35    10.09   571.46   517.22     0.83
 HUB     46.32    38.84     7.48   413.69   572.26    10.09   571.46   517.22     0.83

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   489.38   281.35   400.42  1182.79      0.41     2.05     1.78     7.43
 MEAN    15.50   492.93   278.17   406.94  1178.76      0.42     2.13     1.86     5.75
 HUB     12.59   524.58   322.41   413.81  1174.87      0.45     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    567.84   492.35   286.48     0.42  5050.00      0.92     0.91
 MEAN   490.53   459.01   212.36     0.39  4313.17      0.92     0.91     0.91     1.53
 HUB    398.50   420.75    76.09     0.36  4060.87      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.59     1.15    11.21   609.61     1.04   590.41   527.03     0.56
 MEAN    12.34     1.13    10.96   605.87     1.04   586.39   525.68     0.61
 HUB     12.25     1.12    10.70   604.59     1.04   582.52   525.29     0.67

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.09    35.58    31.50     4.08     0.93     0.44     1.40
 MEAN    34.36    27.56    23.50     4.06     0.93     0.41     1.64
 HUB     37.92    10.42     6.50     3.92     0.93     0.40     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   547.4834   283.2729   468.5024  1174.9573     0.4660    -0.1947     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.3645    10.6765   582.6595   526.0632     0.6670    31.1586    33.0000     1.8414
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   473.5848   108.1435   461.0722  1181.0347     0.4010     0.0729     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.3390    11.0613   588.7034   525.8598   410.5396     0.0377     0.3489

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   458.9590     0.0000   458.9590  1182.0939     0.3883     0.2725     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.1365   589.7870   525.8510     0.0000     0.0600     0.0378     0.1252

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8833    12.3389     1.1304   606.6674    22.7038   250.9926     1.9457

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 141653.594       0.439     533.437  640382.938   0.732011E-03

Melt Ratio at Stator LE, Throat, TE
0.47434E+00 0.50973E+00 0.60855E+00
 trTOT =     1.3129   Tt4 =   606.6674   T1  =   462.0892

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    900670.88   3391.7329    178.9307      2.3879      0.8665      5.3355      1.3129     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 72.7%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.678   EfDer =  0.999    SH =  0.115029E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      65.495    3597.669       5.167     462.089       1.000       1.000       0.980
  W Kg/sec =  29.771  Wdry =  65.488  WH2O = 0.008  lbm/sec   H2O =   0.052g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     175.862    3811.653       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 140501.625   51388.609       1.615     831.557     514.794     619.754       1.204

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   405.51    -0.14   405.51     0.39     0.74   686.19
 MEAN    17.06     0.00    -0.02   405.51    -0.14   405.51     0.39     0.65
 HUB     12.51     0.00    -0.02   405.51    -0.14   405.51     0.39     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.96    50.47     7.49   647.69   764.28     4.65   448.87   452.94     6.59
 MEAN    52.88    47.20     5.68   535.61   671.91     4.65   448.87   452.94     6.59
 HUB     44.10    38.62     5.48   392.76   564.63     4.65   448.87   452.94     6.59

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   636.74   362.67   523.37  1052.60      0.60     7.29     6.52    16.04
 MEAN    18.04   670.89   401.72   537.32  1047.20      0.64     7.43     6.80    12.53
 HUB     15.00   772.82   527.08   565.19  1037.53      0.74     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    647.69   595.95   285.03     0.57  7484.68      0.92     0.91
 MEAN   566.25   561.94   164.53     0.54  7247.83      0.92     0.91     0.91     1.33
 HUB    470.93   567.98    56.14     0.55  7907.88      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.25   499.88     1.08   467.28   477.88     4.11
 MEAN     6.66     1.29     5.07   498.68     1.08   462.49   477.38     4.93
 HUB      6.81     1.32     4.73   502.02     1.09   453.99   479.98     6.87

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.72    28.57    24.20     4.37     0.93     0.35     1.80
 MEAN    36.78    17.02    12.70     4.32     0.92     0.30     2.22
 HUB     43.00    -5.67    -9.30     3.63     0.92     0.16     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   709.7903   400.9406   585.7038  1044.0114     0.6799    -0.0746     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.7061     4.9386   459.6863   478.4877     5.6784    34.3934    35.4000     1.0066

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   556.1285   136.0460   539.2313  1061.6135     0.5239     0.3133     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.6772     5.5509   475.3275   477.7508   554.9116     0.0269     0.4243

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   552.0004     0.0000   552.0004  1061.9996     0.5198     0.3450     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.5484   475.6974   477.8154     0.0000     0.0600     0.0397     0.3118
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8774     6.6555     1.2880   500.1912    38.1045   218.9610     1.6974

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 236990.578       0.565     877.151  724178.875   0.184307E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.673   EfDer =  1.000    SH =  0.279001E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     65.495    3597.669       6.655     500.191       1.000       1.000       0.980
 W Kg/sec =  29.771  Wdry =  65.477  WH2O = 0.018  lbm/sec   H2O =   0.145g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    142.055    3663.628       1.381       0.249      53.357      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 121544.781   51385.301       1.420     590.487     415.882     468.502       1.127

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   494.01    -0.17   494.01     0.46     0.76   656.99
 MEAN    18.08     0.00    -0.02   494.01    -0.17   494.01     0.46     0.71
 HUB     15.21     0.00    -0.02   494.01    -0.17   494.01     0.46     0.64

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.57    46.36     6.21   645.18   812.72     5.76   480.58   478.10     4.62
 MEAN    48.97    42.30     6.67   567.58   752.58     5.76   480.58   478.10     4.62
 HUB     44.04    37.84     6.20   477.53   687.20     5.76   480.58   478.10     4.62

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   571.18   293.58   489.95  1093.37     0.52     2.33     2.04     9.02
 MEAN    18.01   585.74   306.91   498.90  1089.33     0.54     2.40     2.13     7.35
 HUB     15.22   637.60   384.67   508.49  1085.58     0.59     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    641.10   600.68   347.52     0.55  5998.46     0.92     0.91
 MEAN   565.43   561.90   258.52     0.52  5530.57     0.92     0.91     0.91     1.45
 HUB    477.94   516.97    93.26     0.48  5858.46     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.09     1.22     6.73   530.46     1.06   504.24   494.05     2.22
 MEAN     7.97     1.20     6.56   528.09     1.06   500.53   492.98     2.50
 HUB      8.05     1.21     6.40   529.75     1.06   497.08   494.00     2.78

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     30.93    35.35    31.50     3.85     0.93     0.39     1.40
 MEAN    31.60    27.39    23.50     3.89     0.93     0.38     1.63
 HUB     37.11    10.39     6.50     3.89     0.93     0.39     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   652.1634   307.7747   574.9712  1083.5621     0.6019    -0.1784     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.0243     6.3003   495.2632   493.9193     2.9921    28.1596    30.6000     2.4404

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   542.6697   115.0498   530.3339  1095.0018     0.4956     0.1465     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     8.0023     6.7800   505.7732   493.4375   491.5697     0.0249     0.2997

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   567.1297     0.0000   567.1297  1092.6196     0.5191     0.2074     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6578	503.5945	493.5521	0.0000	0.0600	0.0386	0.0636

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8793	7.9820	1.1993	529.4316	29.2425	248.2314	1.9243

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
182016.844	0.443	673.682	650258.000	0.324650E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.831 EfDer = 1.000 SH = 0.397149E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.495	3597.669	7.982	529.431	1.000	1.000	0.980

W Kg/sec = 29.771 Wdry = 65.469 WH2O = 0.026 lbm/sec H2O = 0.238g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
121.860	3561.020	1.381	0.249	53.361	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
105373.844	51382.922	1.529	545.479	356.799	424.468	1.190

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	463.62	-0.16	463.62	0.42	0.71	623.67
MEAN	17.74	0.00	-0.02	463.62	-0.16	463.62	0.42	0.66	
HUB	15.05	0.00	-0.02	463.62	-0.16	463.62	0.42	0.60	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.66	46.36	7.30	630.11	782.42	7.08	512.17	493.47	2.32
MEAN	50.23	43.40	6.83	556.91	724.76	7.08	512.17	493.47	2.32
HUB	45.55	38.84	6.71	472.50	662.08	7.08	512.17	493.47	2.32

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	548.15	292.20	463.78	1125.62	0.49	2.26	1.98	8.75
MEAN	17.51	561.05	304.62	471.16	1121.99	0.50	2.34	2.07	6.78
HUB	14.85	609.90	377.42	479.10	1118.57	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	621.95	569.05	329.75	0.51	5791.71	0.92	0.91		
MEAN	549.63	531.05	245.01	0.47	5335.68	0.92	0.91	0.91	1.48
HUB	466.22	487.26	88.81	0.44	5607.07	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.54	1.20	8.13	558.63	1.06	534.51	506.96	1.31
MEAN	9.41	1.18	7.95	556.33	1.05	531.06	506.02	1.44
HUB	9.49	1.19	7.77	557.70	1.05	527.83	506.78	1.57

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.21	35.41	31.50	3.91	0.93	0.41	1.40
MEAN	32.88	27.48	23.50	3.98	0.93	0.40	1.62
HUB	38.23	10.50	6.50	4.00	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	619.7361	306.6189	538.5701	1117.3585	0.5546	-0.1638	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4659	7.7008	526.7229	506.7543	1.6486	29.6537	31.5000	1.8463

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	519.6914	113.3672	507.1755	1127.0255	0.4611	0.1501	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4468	8.1808	535.8745	506.4039	451.3937	0.0224	0.3224

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	530.2167	0.0000	530.2167	1126.0680	0.4709	0.2328	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1116	534.9891	506.4537	0.0000	0.0600	0.0378	0.1049

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8813	9.4234	1.1806	557.5556	28.1263	237.8495	1.8438

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
175192.625	0.453	648.424	623038.188	0.469230E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.81544E-03 0.19191E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.115 EfDer = 1.000 SH = 0.565709E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.495	3597.669	9.423	557.555	1.000	1.000	0.980

W Kg/sec = 29.771 Wdry = 65.458 WH2O = 0.037 lbm/sec H2O = 0.385g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
105.927	3470.046	1.380	0.249	53.367	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
92590.664	51379.520	1.655	513.330	310.194	395.845	1.276

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	432.89	-0.15	432.89	0.38	0.66	583.21
MEAN	16.97	0.00	-0.02	432.89	-0.15	432.89	0.38	0.61	
HUB	14.32	0.00	-0.02	432.89	-0.15	432.89	0.38	0.55	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.41	46.36	8.05	604.68	743.78	8.53	542.52	506.44	1.40
MEAN	50.91	43.80	7.11	532.81	686.61	8.53	542.52	506.44	1.40
HUB	46.09	37.84	8.25	449.58	624.22	8.53	542.52	506.44	1.40

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	519.26	283.15	435.27	1154.99	0.45	2.16	1.89	8.34
MEAN	16.57	528.87	290.71	441.80	1151.43	0.46	2.24	1.97	6.35
HUB	13.89	571.20	353.33	448.80	1148.04	0.50	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	592.75	534.15	309.60	0.46	5348.73	0.92	0.91		
MEAN	520.35	497.92	229.64	0.43	4820.73	0.92	0.91	0.91	1.50
HUB	436.08	456.37	82.76	0.40	4909.87	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.03	1.17	9.61	584.50	1.05	562.87	517.65	0.89
MEAN	10.86	1.15	9.41	581.84	1.04	559.40	516.64	0.96
HUB	10.89	1.16	9.21	582.29	1.04	556.11	516.94	1.04

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.04	35.42	31.50	3.92	0.93	0.42	1.40
MEAN	33.35	27.46	23.50	3.96	0.93	0.40	1.62
HUB	38.21	10.45	6.50	3.95	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	569.6124	292.3452	488.8687	1148.7552	0.4959	-0.1143	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.9085	9.2416	556.8486	517.1537	1.0305	30.8796	32.4000	1.5204

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	483.9526	108.5364	471.6248	1156.1926	0.4186	0.1708	2.2705

```
   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.8936     9.6718   564.0857   516.9069   432.2457     0.0199     0.3424

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   479.9664     0.0000   479.9664  1156.4774     0.4150     0.2556     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6677   564.3898   516.8807     0.0000     0.0600     0.0374     0.1681

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8820    10.8672     1.1532   582.8649    25.3209   241.0762     1.8688

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 157858.781       0.449     584.268  617568.063   0.627853E-03

Melt Ratio at Stator LE, Throat, TE
0.14435E+00 0.17204E+00 0.24568E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.319   EfDer =  0.999    SH =  0.700341E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     65.495    3597.669      10.867     582.861       1.000       1.000       0.980
 W Kg/sec =  29.771  Wdry =  65.450  WH2O = 0.046  lbm/sec   H2O =   0.535g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     93.916    3393.872       1.380       0.249      53.371      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  82559.484   51376.801       1.853     509.668     275.058     384.739       1.399

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   388.77    -0.13   388.77     0.33     0.60   542.57
 MEAN   15.91     0.00    -0.02   388.77    -0.13   388.77     0.33     0.54
 HUB    13.07     0.00    -0.02   388.77    -0.13   388.77     0.33     0.49

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    55.95    47.36     8.59   575.17   694.34    10.07   570.74   516.83     0.86
 MEAN   52.12    44.80     7.32   499.60   633.14    10.07   570.75   516.83     0.86
 HUB    46.56    38.84     7.72   410.34   565.36    10.07   570.74   516.83     0.86

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   484.27   281.33   394.17  1181.86      0.41     2.05     1.78     7.43
 MEAN   15.50   487.34   277.61   400.54  1177.85      0.41     2.13     1.86     5.75
 HUB    12.59   518.24   320.48   407.26  1173.98      0.44     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   563.24   484.60   281.90     0.41  5049.59      0.92     0.91
 MEAN  486.56   451.76   208.94     0.38  4304.45      0.92     0.91     0.91     1.54
 HUB   395.27   414.07    74.79     0.35  4036.65      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    12.53     1.15    11.18   608.27     1.04   589.47   526.61     0.59
 MEAN   12.27     1.13    10.92   604.52     1.04   585.48   525.25     0.64
 HUB    12.18     1.12    10.67   603.18     1.03   581.65   524.83     0.70

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    35.52    35.57    31.50     4.07     0.93     0.45     1.40
 MEAN   34.73    27.55    23.50     4.05     0.93     0.42     1.64
 HUB    38.20    10.41     6.50     3.91     0.93     0.41     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   540.6373   282.7025   460.8340  1174.1870     0.4604    -0.1923     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.2967    10.6541   581.8953   525.6256     0.6944    31.5274    33.0000     1.4726
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
 RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
 15.2185   465.7704   106.3591   453.4642  1180.2590     0.3946     0.0826     2.1315

 BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
  0.9500    12.2731    11.0396   587.9304   525.4221   410.5396     0.0368     0.3540

  VANED DIFFUSER EXIT:
 R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
 14.7013   451.4936     0.0000   451.4936  1181.2753     0.3822     0.2783     0.5109

 Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
  0.9500    11.1112   588.9703   525.4130     0.0000     0.0600     0.0373     0.1337

  STAGE EXIT CONDITIONS, STAGE            5
  Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
  0.8838    12.2724     1.1293   605.3054    22.4631   248.8838     1.9293

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 140156.500       0.442     518.748  629187.813   0.747741E-03

Melt Ratio at Stator LE, Throat, TE
0.47654E+00 0.51210E+00 0.61124E+00
 trTOT =     1.3099   Tt4 =   605.3054   T1  =   462.0891

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    892215.38   3302.2712    175.8621      2.3750      0.8686      5.6781      1.3099     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 69.9%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 6.017   EfDer =  0.999    SH =  0.116889E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     64.359    3567.880       5.167     462.089       1.000       1.000       0.980
 W Kg/sec =  29.254  Wdry =  64.352  WH2O = 0.008  lbm/sec   H2O =   0.053g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    172.812    3780.092       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 137634.703   50497.172       1.644     831.557     505.865     619.754       1.225

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   397.23    -0.14   397.23     0.38     0.73   680.51
 MEAN    17.06     0.00    -0.02   397.23    -0.14   397.23     0.38     0.64
 HUB     12.51     0.00    -0.02   397.23    -0.14   397.23     0.38     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.27    50.47     7.80   642.33   755.35     4.67   449.40   452.94     6.55
 MEAN    53.22    47.20     6.02   531.18   663.39     4.67   449.40   452.94     6.55
 HUB     44.45    38.62     5.83   389.51   556.43     4.67   449.40   452.94     6.55

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   628.11   363.42   512.30  1053.33      0.60     7.29     6.52    16.04
 MEAN    18.04   661.08   400.60   525.87  1047.93      0.63     7.43     6.80    12.53
 HUB     15.00   759.86   521.90   552.27  1038.53      0.73     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    642.33   583.31   278.91     0.55  7500.07      0.92     0.91
 MEAN   561.56   549.96   160.96     0.52  7227.56      0.92     0.91     0.91     1.34
 HUB    467.03   554.99    54.86     0.53  7830.20      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.70     1.30     5.28   499.64     1.08   467.92   477.73     4.09
 MEAN     6.64     1.28     5.09   498.28     1.08   463.14   477.13     4.91
 HUB      6.77     1.31     4.76   501.30     1.08   454.87   479.51     6.77

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.35    28.57    24.20     4.37     0.93     0.36     1.80
 MEAN    37.30    17.02    12.70     4.32     0.93     0.31     2.22
 HUB     43.38    -5.67    -9.30     3.63     0.93     0.17     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   698.2968   399.8217   572.5041  1044.9722     0.6682    -0.0721     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6872     4.9740   460.5344   478.1911     5.6075    34.9294    35.4000     0.4706

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   544.2917   133.1504   527.7542  1062.2745     0.5124     0.3221     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6603     5.5803   475.9213   477.4849   554.9116     0.0263     0.4313

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   540.0797     0.0000   540.0797  1062.6598     0.5082     0.3534     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5795   476.2905   477.5549     0.0000     0.0600     0.0381     0.3216
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8799     6.6407     1.2852   499.7374    37.6508   216.8577     1.6811

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 234172.844       0.568     851.687  709402.063   0.188579E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.014   EfDer =  1.000    SH =  0.286363E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.359    3567.880       6.641     499.737       1.000       1.000       0.980
 W Kg/sec =  29.254  Wdry =  64.341  WH2O = 0.018  lbm/sec   H2O =   0.149g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    139.838    3634.942       1.381       0.249      53.358      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 119095.414   50493.813       1.442     590.487     409.392     468.502       1.144

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   484.05    -0.17   484.05     0.45     0.75   651.84
 MEAN    18.08     0.00    -0.02   484.05    -0.17   484.05     0.45     0.70
 HUB     15.21     0.00    -0.02   484.05    -0.17   484.05     0.45     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.90     46.36     6.54   639.84   802.44     5.78   480.91   477.86     4.69
 MEAN    49.31     42.30     7.01   562.88   742.51     5.78   480.91   477.86     4.69
 HUB     44.38     37.84     6.54   473.57   677.30     5.78   480.91   477.86     4.69

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   564.00   295.02   480.68  1093.47      0.52     2.33     2.04     9.02
 MEAN    18.01   577.94   307.27   489.48  1089.42      0.53     2.40     2.13     7.35
 HUB     15.22   628.74   382.62   498.92  1085.63      0.58     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    635.79   589.22   340.77     0.54  6027.71      0.92     0.91
 MEAN   560.75   551.23   253.48     0.51  5536.89      0.92     0.91     0.91     1.46
 HUB    473.98   507.21    91.36     0.47  5827.13      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.07     1.22     6.75   529.90     1.06   504.34   493.81     2.27
 MEAN     7.94     1.20     6.57   527.44     1.06   500.60   492.68     2.56
 HUB      8.02     1.21     6.41   528.89     1.06   497.13   493.60     2.86

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.54    35.33    31.50     3.83     0.93     0.40     1.40
 MEAN    32.12    27.38    23.50     3.88     0.93     0.38     1.63
 HUB     37.48    10.38     6.50     3.88     0.93     0.39     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   641.9910   308.1302   563.2124  1083.9640     0.5923    -0.1739     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.9962     6.3251   495.6322   493.5928     3.0390    28.6828    30.6000     1.9172

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   531.8032   112.7461   519.7143  1095.2693     0.4855     0.1580     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.9761     6.8020   506.0224   493.1194   491.5697     0.0240     0.3070

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   555.4017     0.0000   555.4017  1093.0175     0.5081     0.2156     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6854	503.9632	493.2303	0.0000	0.0600	0.0379	0.0768

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8806	7.9562	1.1981	528.7421	29.0067	245.1622	1.9005

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
180553.922	0.447	656.675	636751.500	0.333246E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 7.123 EfDer = 1.000 SH = 0.407419E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.359	3567.880	7.956	528.742	1.000	1.000	0.980

W Kg/sec = 29.254 Wdry = 64.333 WH2O = 0.026 lbm/sec H2O = 0.244g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
120.057	3533.836	1.381	0.249	53.362	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
103422.672	50491.410	1.552	545.479	351.521	424.468	1.208

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	455.04	-0.16	455.04	0.41	0.70	618.91
MEAN	17.74	0.00	-0.02	455.04	-0.16	455.04	0.41	0.65	
HUB	15.05	0.00	-0.02	455.04	-0.16	455.04	0.41	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.95	46.36	7.59	624.89	773.14	7.09	512.11	493.17	2.38
MEAN	50.52	43.40	7.12	552.30	715.73	7.09	512.11	493.17	2.38
HUB	45.85	38.84	7.01	468.59	653.29	7.09	512.11	493.17	2.38

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	541.74	292.95	455.70	1125.31	0.48	2.26	1.98	8.75
MEAN	17.51	554.09	304.46	462.95	1121.66	0.49	2.34	2.07	6.78
HUB	14.85	602.01	375.23	470.76	1118.24	0.54	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	616.80	559.05	323.85	0.50	5806.40	0.92	0.91		
MEAN	545.08	521.75	240.62	0.47	5332.82	0.92	0.91	0.91	1.49
HUB	462.36	478.76	87.14	0.43	5574.50	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.50	1.19	8.13	557.78	1.05	534.21	506.63	1.36
MEAN	9.37	1.18	7.95	555.41	1.05	530.75	505.66	1.49
HUB	9.44	1.19	7.77	556.62	1.05	527.51	506.34	1.63

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.73	35.40	31.50	3.90	0.93	0.41	1.40
MEAN	33.33	27.46	23.50	3.96	0.93	0.40	1.62
HUB	38.56	10.49	6.50	3.99	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	611.0366	306.4573	528.6299	1117.2539	0.5469	-0.1606	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4223	7.7081	526.6255	506.3723	1.6977	30.1017	31.5000	1.3983

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	510.2144	111.2998	497.9267	1126.8408	0.4528	0.1600	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4047	8.1856	535.7009	506.0233	451.3937	0.0218	0.3287

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	520.4200	0.0000	520.4200	1125.9282	0.4622	0.2397	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1190	534.8582	506.0730	0.0000	0.0600	0.0373	0.1153

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8821	9.3817	1.1792	556.5977	27.8579	235.3669	1.8245

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
173526.406	0.456	631.116	610910.250	0.480767E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.89448E-03 0.19461E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.361 EfDer = 0.999 SH = 0.578572E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.359	3567.880	9.382	556.597	1.000	1.000	0.980

W Kg/sec = 29.254 Wdry = 64.322 WH2O = 0.037 lbm/sec H2O = 0.394g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
104.462	3444.274	1.380	0.249	53.367	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
91020.258	50488.016	1.678	513.330	305.906	395.845	1.294

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	425.55	-0.15	425.55	0.38	0.65	578.88
MEAN	16.97	0.00	-0.02	425.55	-0.15	425.55	0.38	0.60	
HUB	14.32	0.00	-0.02	425.55	-0.15	425.55	0.38	0.54	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.65	46.36	8.29	599.67	735.44	8.52	542.07	506.07	1.45
MEAN	51.16	43.80	7.36	528.39	678.56	8.52	542.07	506.07	1.45
HUB	46.34	37.84	8.50	445.86	616.45	8.52	542.07	506.07	1.45

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	513.53	283.31	428.31	1154.28	0.44	2.16	1.89	8.34
MEAN	16.57	522.67	290.18	434.71	1150.73	0.45	2.24	1.97	6.35
HUB	13.89	564.18	351.15	441.58	1147.34	0.49	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	587.84	525.54	304.53	0.46	5351.65	0.92	0.91		
MEAN	516.04	489.88	225.86	0.43	4811.93	0.92	0.91	0.91	1.51
HUB	432.47	449.00	81.32	0.39	4879.61	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.97	1.17	9.59	583.33	1.05	562.17	517.24	0.92
MEAN	10.80	1.15	9.39	580.64	1.04	558.72	516.21	1.00
HUB	10.82	1.15	9.19	580.97	1.04	555.44	516.47	1.08

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.48	35.41	31.50	3.91	0.93	0.42	1.40
MEAN	33.72	27.45	23.50	3.95	0.93	0.41	1.62
HUB	38.49	10.43	6.50	3.93	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	562.4016	291.8142	480.7702	1148.1636	0.4898	-0.1126	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.8462	9.2249	556.2756	516.7133	1.0702	31.2566	32.4000	1.1434

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	475.9669	106.7455	463.8426	1155.5634	0.4119	0.1788	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.8323     9.6531   563.4726   516.4650   432.2457     0.0194     0.3477

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   472.0503     0.0000   472.0503  1155.8378     0.4084     0.2614     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6488   563.7663   516.4405     0.0000     0.0600     0.0371     0.1758

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8825    10.8064     1.1519   581.6364    25.0502   238.9568     1.8524

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 156176.125       0.452     568.013  606220.313   0.641805E-03

Melt Ratio at Stator LE, Throat, TE
0.14418E+00 0.17194E+00 0.24582E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.521   EfDer =  0.999    SH =  0.715508E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.359    3567.880      10.806     581.633       1.000       1.000       0.980
 W Kg/sec =  29.254  Wdry =  64.313  WH2O = 0.046  lbm/sec   H2O =   0.546g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     92.708    3369.323       1.380       0.249      53.372      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  81282.375   50485.305       1.877     509.668     271.523     384.739       1.417

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   382.75    -0.13   382.75     0.33     0.59   538.64
 MEAN   15.91     0.00    -0.02   382.75    -0.13   382.75     0.33     0.54
 HUB    13.07     0.00    -0.02   382.75    -0.13   382.75     0.33     0.48

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    56.14    47.36     8.78   570.40   687.03    10.03   569.89   516.40     0.90
 MEAN   52.32    44.80     7.52   495.46   626.19    10.03   569.89   516.40     0.90
 HUB    46.76    38.84     7.92   406.94   558.76    10.03   569.89   516.40     0.90

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   479.33   280.87   388.42  1180.75     0.41     2.05     1.78     7.43
 MEAN   15.50   482.00   276.74   394.64  1176.78     0.41     2.13     1.86     5.75
 HUB    12.59   512.17   318.36   401.20  1172.94     0.44     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   558.57   477.48   277.70     0.40  5041.26     0.92     0.91
 MEAN  482.53   445.07   205.78     0.38  4290.96     0.92     0.91     0.91     1.55
 HUB   392.00   407.90    73.63     0.35  4009.94     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    12.44     1.15    11.12   606.79     1.04   588.37   526.12     0.62
 MEAN   12.19     1.13    10.87   603.05     1.04   584.42   524.76     0.67
 HUB    12.09     1.12    10.63   601.65     1.03   580.62   524.31     0.73

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    35.87    35.56     31.50     4.06     0.93     0.45     1.40
 MEAN   35.04    27.54     23.50     4.04     0.93     0.42     1.64
 HUB    38.43    10.40      6.50     3.90     0.93     0.41     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   534.1733   281.8182   453.7837  1173.2408     0.4553    -0.1904     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.2133    10.6149   580.9568   525.1260     0.7253    31.8420    33.0000     1.1580
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   458.6299   104.7285   446.5124  1179.2893     0.3889     0.0906     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.1912    10.9990   586.9639   524.9219   410.5396     0.0362     0.3584

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   444.6648     0.0000   444.6648  1180.2678     0.3767     0.2830     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.0673   587.9651   524.9126     0.0000     0.0600     0.0371     0.1407

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8842    12.1900     1.1280   603.8093    22.1956   247.1115     1.9156

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 138491.406       0.444     503.694  618255.813   0.763787E-03

Melt Ratio at Stator LE, Throat, TE
0.47615E+00 0.51177E+00 0.61099E+00
 trTOT =     1.3067   Tt4 =   603.8093   T1  =   462.0890

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    882920.63   3211.1848    172.8116      2.3591      0.8701      6.0166      1.3067     37.3740
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10µm, ISA +36R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.998   EfDer =  0.986    SH =  0.232229E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      73.869    3973.766       5.167     482.270       1.000       1.000       0.980
  W Kg/sec =  33.577  Wdry =  73.852  WH2O = 0.017  lbm/sec   H2O =   0.097g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     202.634    4121.098       1.381       0.248      53.356      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 170845.094   57955.750       1.402     831.557     593.203     619.754       1.045

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   493.08    -0.17   493.08     0.47     0.83   741.90
 MEAN    17.06     0.00    -0.02   493.08    -0.17   493.08     0.47     0.74
 HUB     12.51     0.00    -0.02   493.08    -0.17   493.08     0.47     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.43     50.47     4.96   715.40   869.01     4.45   462.73   465.97     6.56
 MEAN    50.20     47.20     3.00   591.61   770.28     4.45   462.73   465.97     6.56
 HUB     41.35     38.62     2.73   433.82   656.87     4.45   462.73   465.97     6.56

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   740.78   363.27   645.60  1066.78      0.69     7.29     6.52    16.04
 MEAN    18.04   786.44   421.80   663.75  1061.23      0.74     7.43     6.80    12.53
 HUB     15.00   927.91   591.85   714.66  1047.27      0.89     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    715.40   735.39   352.13     0.69  7497.73      0.92     0.90
 MEAN   625.45   694.29   203.65     0.65  7610.52      0.92     0.90     0.90     1.21
 HUB    520.16   718.25    71.69     0.69  8879.87      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.79     1.31     4.94   524.07     1.09   479.96   489.88     4.18
 MEAN     6.81     1.32     4.75   524.70     1.09   474.98   490.64     4.99
 HUB      7.12     1.38     4.30   531.78     1.10   462.56   496.18     7.88

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.37    28.61    24.20     4.41     0.93     0.27     1.80
 MEAN    32.44    17.06    12.70     4.36     0.91     0.23     2.22
 HUB     39.63    -5.73    -9.30     3.57     0.91     0.07     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.986       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   849.0142   420.9822   737.2918  1054.4296     0.8052    -0.1053     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.8848     4.5140   468.9125   492.5395     6.3943    29.7257    35.4000     5.6743

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth       Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   690.2915   168.8664   669.3179  1076.2708     0.6414     0.2332     5.4957

    BlockageTh  PtTh      PsTh      TsTh       TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.8154     5.1846   488.5531   490.6584   554.9116     0.0409     0.3627

     VANED DIFFUSER EXIT:
    R4        C4         Cu4        Cm4        Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   691.6230     0.0000   691.6230  1076.0790     0.6427     0.2592     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.1284	488.4113	490.6686	0.0000	0.0600	0.0705	0.2081

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8271	6.7488	1.3061	526.8475	44.5792	237.0189	1.8374

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
277352.156	0.542	1157.775	816810.500	0.330432E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.665 EfDer = 0.990 SH = 0.455418E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.869	3973.766	6.749	526.847	1.000	1.000	0.980

W Kg/sec = 33.577 Wdry = 73.835 WH2O = 0.034 lbm/sec H2O = 0.217g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
162.156	3942.919	1.381	0.249	53.363	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
149186.266	57950.676	1.244	590.487	474.780	468.502	0.987

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	606.35	-0.21	606.35	0.56	0.86	707.07
MEAN	18.08	0.00	-0.02	606.35	-0.21	606.35	0.56	0.80	
HUB	15.21	0.00	-0.02	606.35	-0.21	606.35	0.56	0.74	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.61	46.36	3.25	712.63	935.84	5.48	497.32	490.73	3.62
MEAN	45.96	42.30	3.66	626.91	872.32	5.48	497.32	490.73	3.62
HUB	41.03	37.84	3.19	527.45	803.79	5.48	497.32	490.73	3.62

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	659.46	283.70	595.31	1114.78	0.59	2.33	2.04	9.02
MEAN	18.01	679.53	308.93	605.24	1111.12	0.61	2.40	2.13	7.35
HUB	15.22	741.86	413.16	616.17	1107.83	0.67	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	708.12	731.11	424.41	0.66	5797.50	0.92	0.91		
MEAN	624.54	682.59	315.62	0.61	5567.51	0.92	0.91	0.91	1.38
HUB	527.90	626.76	114.74	0.57	6292.66	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.21	1.22	6.50	559.14	1.06	524.21	504.93	1.66
MEAN	8.15	1.21	6.35	557.86	1.06	520.77	504.53	1.84
HUB	8.34	1.24	6.20	561.90	1.07	517.70	506.54	2.00

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.48	35.49	31.50	3.99	0.93	0.33	1.40
MEAN	27.04	27.54	23.50	4.04	0.92	0.33	1.63
HUB	33.84	10.55	6.50	4.05	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.990	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	777.7106	309.7927	713.3458	1100.6708	0.7066	-0.2326	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2156	5.9109	511.0679	505.9639	2.4655	23.4744	30.6000	7.1256

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	670.7184	142.1971	655.4717	1114.0001	0.6021	0.0294	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.1582	6.4046	523.5085	505.0672	491.5697	0.0405	0.2261

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	712.9634	0.0000	712.9634	1108.9729	0.6429	0.1056	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.1543	518.8205	505.2965	0.0000	0.0600	0.0715	-0.1033

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8290	8.0996	1.2001	559.6291	32.7834	278.6781	2.1603

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
204182.406	0.407	852.336	739166.375	0.517065E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.055 EfDer = 0.993 SH = 0.611997E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.869	3973.766	8.100	559.629	1.000	1.000	0.980

W Kg/sec = 33.577 Wdry = 73.823 WH2O = 0.045 lbm/sec H2O = 0.339g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
139.254	3825.694	1.380	0.249	53.368	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
128354.023	57947.109	1.338	545.479	407.785	424.468	1.041

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	564.73	-0.19	564.73	0.50	0.80	670.03
MEAN	17.74	0.00	-0.02	564.73	-0.19	564.73	0.50	0.74	
HUB	15.05	0.00	-0.02	564.73	-0.19	564.73	0.50	0.68	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.95	46.36	4.59	695.98	896.42	6.83	534.04	504.80	1.60
MEAN	47.46	43.40	4.06	615.13	835.19	6.83	534.04	504.80	1.60
HUB	42.75	38.84	3.91	521.90	769.09	6.83	534.04	504.80	1.60

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	629.25	286.98	560.01	1151.60	0.55	2.26	1.98	8.75
MEAN	17.51	647.33	309.87	568.35	1148.19	0.56	2.34	2.07	6.78
HUB	14.85	706.23	406.48	577.53	1145.09	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	686.96	688.18	399.99	0.60	5688.89	0.92	0.91		
MEAN	607.09	641.37	297.22	0.56	5428.20	0.92	0.91	0.91	1.40
HUB	514.96	587.63	108.48	0.51	6039.16	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.71	1.20	7.95	591.29	1.06	559.51	517.22	0.88
MEAN	9.64	1.19	7.79	589.84	1.05	556.21	516.76	0.95
HUB	9.82	1.21	7.62	593.24	1.06	553.21	518.27	1.02

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	27.13	35.54	31.50	4.04	0.93	0.35	1.40
MEAN	28.60	27.61	23.50	4.11	0.92	0.35	1.62
HUB	35.14	10.64	6.50	4.14	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.993	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	729.1244	311.9030	659.0439	1140.4646	0.6393	-0.2019	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.7047	7.3962	548.8092	517.7455	1.1508	25.3266	31.5000	6.1734

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	635.5494	138.6408	620.2433	1151.0688	0.5521	0.0440	2.3726

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.6586     7.8720   559.0500   517.2009   451.3937     0.0338     0.2591

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   652.3992     0.0000   652.3992  1149.2428     0.5677     0.1518     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.7466   557.3113   517.2255     0.0000     0.0600     0.0575    -0.0207

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8496     9.6127     1.1868   591.4478    31.8254   264.1176     2.0474

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 198402.547       0.420     828.209  699173.875   0.687395E-03

Melt Ratio at Stator LE, Throat, TE
0.47522E-01 0.63716E-01 0.11294E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 4.652   EfDer =  0.996    SH =  0.774524E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     73.869    3973.766       9.613     591.446       1.000       1.000       0.980
 W Kg/sec =  33.577  Wdry =  73.811  WH2O = 0.057  lbm/sec   H2O =   0.494g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    120.624    3721.364       1.380       0.249      53.373      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 111586.211   57943.406       1.453     513.330     353.288     395.845       1.120

ROTOR LEADING EDGE CONDITIONS, STAGE   4

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    19.26     0.00    -0.02   521.70    -0.18   521.70     0.45     0.73   625.45
 MEAN   16.97     0.00    -0.02   521.70    -0.18   521.70     0.45     0.68
 HUB    14.32     0.00    -0.02   521.70    -0.18   521.70     0.45     0.62

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    52.01    46.36     5.65   667.89   847.64     8.39   569.63   516.95     0.82
 MEAN   48.45    43.80     4.65   588.50   786.59     8.39   569.63   516.95     0.82
 HUB    43.60    37.84     5.76   496.58   720.38     8.39   569.63   516.95     0.82

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    18.88   592.40   283.11   520.37  1185.46     0.50     2.16     1.89     8.34
 MEAN   16.57   606.85   298.94   528.11  1181.89     0.51     2.24     1.97     6.35
 HUB    13.89   658.39   381.64   536.50  1178.57     0.56     2.26     2.10     4.19

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   654.71   639.43   371.60     0.54  5348.57     0.92     0.91
 MEAN  574.74   595.79   275.80     0.50  4957.72     0.92     0.91     0.91     1.43
 HUB   481.67   545.75   100.04     0.46  5303.51     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    11.31     1.18     9.56   621.18     1.05   593.05   527.60     0.51
 MEAN   11.18     1.16     9.36   619.01     1.05   589.48   526.91     0.55
 HUB    11.30     1.18     9.16   620.93     1.05   586.18   527.73     0.58

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    28.55    35.53    31.50     4.03     0.93     0.36     1.40
 MEAN   29.51    27.58    23.50     4.08     0.92     0.36     1.62
 HUB    35.43    10.56     6.50     4.06     0.92     0.38     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.996       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   660.7454   300.6257   588.3950  1177.7018     0.5610    -0.1349     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   11.2428     9.1050   585.3826   527.5208     0.5972    27.0636    32.4000     5.3364
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   583.0784   130.7674   568.2256  1185.4624     0.4919     0.0842     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    11.2090    9.5211   593.1203   527.2117   432.2457     0.0278     0.2887

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   578.3818     0.0000   578.3818  1185.8589     0.4877     0.1928     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.5171   593.5525   527.1498     0.0000     0.0600     0.0462     0.0821

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8651    11.1740     1.1624   620.3545    28.9247   264.3607     2.0493

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 180502.063       0.421     753.485  685141.750   0.827912E-03

Melt Ratio at Stator LE, Throat, TE
0.30886E+00 0.34380E+00 0.43447E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.249   EfDer =  0.998    SH =  0.890226E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     73.869    3973.766      11.174     620.350       1.000       1.000       0.980
 W Kg/sec =  33.577  Wdry =  73.803  WH2O = 0.066  lbm/sec   H2O =   0.645g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    106.275    3633.628       1.379       0.249      53.377      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  98189.766   57940.777       1.637     509.668     311.313     384.739       1.236

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   462.37    -0.16   462.37     0.39     0.66   580.90
 MEAN    15.91     0.00    -0.02   462.37    -0.16   462.37     0.39     0.60
 HUB     13.07     0.00    -0.02   462.37    -0.16   462.37     0.39     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.96    47.36     6.60   635.29   785.87    10.09   603.23   526.98     0.46
 MEAN    50.05    44.80     5.25   551.83   720.05    10.09   603.23   526.98     0.46
 HUB     44.44    38.84     5.60   453.24   647.57    10.09   603.23   526.98     0.46

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   547.24   288.31   465.13  1216.91      0.45     2.05     1.78     7.43
 MEAN    15.50   554.76   289.64   473.15  1212.55      0.46     2.13     1.86     5.75
 HUB     12.59   593.84   347.39   481.62  1208.41      0.49     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    622.12   572.52   333.81     0.47  5175.21      0.92     0.91
 MEAN   537.42   534.11   247.78     0.44  4491.23      0.92     0.91     0.91     1.48
 HUB    436.59   489.81    89.20     0.41  4375.74      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.99     1.16    11.33   649.09     1.05   625.10   536.61     0.31
 MEAN    12.74     1.14    11.06   645.29     1.04   620.64   535.41     0.33
 HUB     12.70     1.14    10.79   644.65     1.04   616.41   535.30     0.36

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.79    35.67    31.50     4.17     0.93     0.40     1.40
 MEAN    31.47    27.64    23.50     4.14     0.92     0.38     1.64
 HUB     35.80    10.49     6.50     3.99     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   622.5938   294.9493   548.2955  1207.2584     0.5157    -0.2150     2.0437
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     Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
    12.7732    10.6804   615.3036    535.8494     0.3680    28.2775    33.0000     4.7225

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG        Cth        Cuth       Cmth       Aoth          Machth     cp 2-Th     Stat Chord
    15.2185   555.3951   126.8249   540.7209  1213.4598     0.4577    -0.0093     2.1315

    BlockageTh  PtTh       PsTh       TsTh       TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500    12.7228    11.0415   621.6352    535.5975   410.5396     0.0488     0.3091

     VANED DIFFUSER EXIT:
    R4         C4          Cu4        Cm4        Ao4           Mach4      cp 3-4   Stator Gap
    14.7013   536.8154     0.0000   536.8154  1214.9980     0.4418     0.2266     0.5109

    Blockage4   Ps4       Ts4        TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500    11.1546   623.2483   535.5881     0.0000     0.0600     0.0442     0.0553

     STAGE EXIT CONDITIONS, STAGE             5
     Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
     0.8723    12.7309     1.1393   646.3146    25.9902   268.5062     2.0814

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 162346.813       0.419     677.698  690319.188   0.929721E-03

Melt Ratio at Stator LE, Throat, TE
0.70757E+00 0.74651E+00 0.85654E+00
 trTOT =     1.3401   Tt4 =   646.3146   T1  =   482.2704

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
   1022786.00   4269.5044    202.6338      2.4638      0.8287      2.9979      1.3401     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 75.6%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.364   EfDer =  0.998    SH =  0.259859E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      65.173    3705.867       5.167     482.270       1.000       1.000       0.980
  W Kg/sec =  29.624  Wdry =  65.156  WH2O = 0.017  lbm/sec   H2O =   0.111g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     178.780    3843.266       1.381       0.249      53.357      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 146384.203   51132.582       1.589     831.557     523.383     619.754       1.184

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   422.49    -0.15   422.49     0.40     0.75   691.89
 MEAN    17.06     0.00    -0.02   422.49    -0.15   422.49     0.40     0.66
 HUB     12.51     0.00    -0.02   422.49    -0.15   422.49     0.40     0.56

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.66    50.47     7.19   667.17   789.81     4.63   467.92   465.86     6.02
 MEAN    52.56    47.20     5.36   551.72   695.02     4.63   467.92   465.86     6.02
 HUB     43.77    38.62     5.15   404.57   585.06     4.63   467.92   465.86     6.02

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   659.25   369.89   545.71  1074.58      0.61     7.29     6.52    16.04
 MEAN    18.04   695.29   411.64   560.35  1069.05      0.65     7.43     6.80    12.53
 HUB     15.00   802.64   543.74   590.41  1058.89      0.76     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    667.17   621.43   297.28     0.58  7633.83      0.92     0.91
 MEAN   583.28   586.04   171.64     0.55  7426.81      0.92     0.91     0.91     1.32
 HUB    485.10   593.31    58.64     0.56  8157.89      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.72     1.30     5.23   521.95     1.08   487.02   488.58     3.79
 MEAN     6.67     1.29     5.04   520.88     1.08   482.02   488.35     4.50
 HUB      6.84     1.32     4.69   524.68     1.09   472.90   491.32     6.21

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.13    28.58    24.20     4.38     0.93     0.34     1.80
 MEAN    36.30    17.03    12.70     4.33     0.92     0.29     2.22
 HUB     42.64    -5.67    -9.30     3.63     0.92     0.15     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   736.8060   410.8391   611.6326  1065.5482     0.6915    -0.0771     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7250     4.9030   478.8795   489.5419     5.1661    33.8896    35.4000     1.5104

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   579.9757   141.8798   562.3539  1083.8419     0.5351     0.3051     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6939     5.5216   495.4758   488.3897   554.9116     0.0277     0.4177

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   575.8903     0.0000   575.8903  1084.2290     0.5312     0.3370     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5170   495.8586   488.4764     0.0000     0.0600     0.0415     0.3024
```

```
    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8743     6.6697     1.2908   522.5020    40.2346   220.9220     1.7126

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 250381.000       0.563     922.147  699863.000   0.389405E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.353   EfDer =  1.000    SH =  0.553209E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     65.173    3705.867       6.670     522.502       1.000       1.000       0.980
 W Kg/sec =  29.624  Wdry =  65.137  WH2O = 0.036  lbm/sec   H2O =   0.274g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    144.167    3692.359       1.381       0.249      53.366      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 126621.617   51126.691       1.399     590.487     422.135     468.502       1.110

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   514.64    -0.18   514.64     0.47     0.77   662.14
 MEAN    18.08     0.00    -0.02   514.64    -0.18   514.64     0.47     0.71
 HUB     15.21     0.00    -0.02   514.64    -0.18   514.64     0.47     0.65

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.25    46.36     5.89   664.58   840.69     5.74   501.24   488.81     3.95
 MEAN    48.65    42.30     6.35   584.65   779.02     5.74   501.24   488.81     3.95
 HUB     43.72    37.84     5.88   491.89   712.03     5.74   501.24   488.81     3.95

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   590.78   298.61   509.76  1116.82     0.53     2.33     2.04     9.02
 MEAN    18.01   606.28   313.31   519.05  1112.72     0.54     2.40     2.13     7.35
 HUB     15.22   660.28   395.13   529.00  1108.93     0.60     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    660.38   625.08   361.76     0.56  6101.34     0.92     0.91
 MEAN   582.44   584.67   269.13     0.53  5645.94     0.92     0.91     0.91     1.44
 HUB    492.31   537.85    97.18     0.49  6017.73     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.11     1.22     6.72   554.18     1.06   526.16   503.25     1.96
 MEAN     8.00     1.20     6.55   551.82     1.06   522.31   502.35     2.19
 HUB      8.09     1.21     6.38   553.75     1.06   518.75   503.48     2.42

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     30.36    35.36    31.50     3.86     0.93     0.38     1.40
 MEAN    31.12    27.41    23.50     3.91     0.93     0.37     1.63
 HUB     36.76    10.41     6.50     3.91     0.93     0.39     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   676.5714   314.1917   599.1931  1106.4912     0.6115    -0.1828     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.0517     6.2751   516.5098   503.3958     2.6140    27.6706    30.6000     2.9294

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   565.2650   119.8402   552.4154  1118.3148     0.5055     0.1355     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     8.0276     6.7577   527.6036   502.7080   491.5697     0.0259     0.2927

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   591.2593     0.0000   591.2593  1115.7310     0.5299     0.1989     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6284	525.1942	502.8745	0.0000	0.0600	0.0402	0.0501

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8771	8.0060	1.2004	553.2487	30.7485	251.1532	1.9469

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
191575.078	0.439	705.566	629029.875	0.629227E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.555 EfDer = 1.000 SH = 0.743594E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.173	3705.867	8.006	553.248	1.000	1.000	0.980

W Kg/sec = 29.624 Wdry = 65.124 WH2O = 0.048 lbm/sec H2O = 0.426g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
123.586	3588.292	1.380	0.249	53.372	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
109611.445	51122.875	1.507	545.479	361.935	424.468	1.173

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	482.26	-0.17	482.26	0.43	0.72	628.45
MEAN	17.74	0.00	-0.02	482.26	-0.17	482.26	0.43	0.67	
HUB	15.05	0.00	-0.02	482.26	-0.17	482.26	0.43	0.61	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.39	46.36	7.03	649.06	808.75	7.07	534.59	502.70	1.97
MEAN	49.96	43.40	6.56	573.66	749.57	7.07	534.59	502.70	1.97
HUB	45.27	38.84	6.43	486.71	685.30	7.07	534.59	502.70	1.97

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	566.51	297.88	481.87	1150.15	0.49	2.26	1.98	8.75
MEAN	17.51	580.21	311.45	489.54	1146.44	0.51	2.34	2.07	6.78
HUB	14.85	631.07	387.87	497.80	1142.98	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	640.65	591.34	342.77	0.51	5904.42	0.92	0.91		
MEAN	566.16	551.84	254.71	0.48	5455.37	0.92	0.91	0.91	1.47
HUB	480.25	506.30	92.37	0.44	5762.40	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.58	1.20	8.13	583.88	1.06	558.14	515.16	1.13
MEAN	9.45	1.18	7.95	581.55	1.05	554.55	514.34	1.24
HUB	9.54	1.19	7.77	583.14	1.05	551.20	515.18	1.34

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.72	35.43	31.50	3.93	0.93	0.40	1.40
MEAN	32.47	27.49	23.50	3.99	0.93	0.39	1.62
HUB	37.92	10.51	6.50	4.01	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	641.9476	313.4942	560.1947	1141.4835	0.5624	-0.1669	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.5073	7.6917	549.8125	515.1198	1.4015	29.2321	31.5000	2.2679

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	540.4314	117.8915	527.4161	1151.4325	0.4694	0.1405	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4867	8.1741	559.4352	514.6384	451.3937	0.0231	0.3165

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   551.5056     0.0000   551.5056  1150.4000     0.4794     0.2262     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.1024   558.4649   514.6765     0.0000     0.0600     0.0384     0.0949

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8804     9.4628     1.1820   582.8484    29.6080   240.2138     1.8621

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 184654.719       0.450     680.078  602077.688   0.826142E-03

Melt Ratio at Stator LE, Throat, TE
0.65340E-01 0.86235E-01 0.14722E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 6.886   EfDer =  1.000    SH =  0.917763E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     65.173    3705.867       9.463     582.846       1.000       1.000       0.980
 W Kg/sec =  29.624  Wdry =  65.113  WH2O = 0.060  lbm/sec   H2O =   0.599g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    107.321    3495.989       1.380       0.249      53.378      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  96156.383   51119.371       1.633     513.330     314.353     395.845       1.259

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1       CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   449.56    -0.15   449.56      0.39     0.66   587.57
 MEAN    16.97     0.00    -0.02   449.56    -0.15   449.56      0.39     0.61
 HUB     14.32     0.00    -0.02   449.56    -0.15   449.56      0.39     0.56

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     54.19    46.36     7.83   622.86   768.28      8.54   566.65   514.52     1.08
 MEAN    50.69    43.80     6.89   548.83   709.57      8.54   566.65   514.52     1.08
 HUB     45.86    37.84     8.02   463.11   645.53      8.54   566.65   514.52     1.08

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   536.26   289.26   451.56  1180.50     0.45     2.16     1.89     8.34
 MEAN    16.57   546.53   297.63   458.37  1176.85     0.46     2.24     1.97     6.35
 HUB     13.89   590.60   363.25   465.67  1173.39     0.50     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    610.58   554.21   321.32     0.47  5464.19     0.92     0.91
 MEAN   536.00   516.65   238.36     0.44  4935.57     0.92     0.91     0.91     1.49
 HUB    449.20   473.54    85.94     0.40  5047.83     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     11.08     1.17     9.64   611.16     1.05   588.12   525.05     0.69
 MEAN    10.92     1.15     9.44   608.42     1.04   584.49   524.12     0.74
 HUB     10.95     1.16     9.23   609.00     1.04   581.05   524.48     0.80

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.64    35.43    31.50     3.93     0.93     0.41     1.40
 MEAN    33.00    27.48    23.50     3.98     0.93     0.40     1.62
 HUB     37.96    10.46     6.50     3.96     0.93     0.41     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   589.1646   299.3075   507.4741  1174.0012     0.5018    -0.1160     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.9686     9.2566   581.7205   524.6359     0.7926    30.5320    32.4000     1.8680

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   502.3299   112.6579   489.5340  1181.6305     0.4251     0.1633     2.2705
```

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.9526	9.6888	589.3093	524.3372	432.2457	0.0203	0.3376

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	498.1774	0.0000	498.1774	1181.9225	0.4215	0.2503	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.6851	589.6347	524.2942	0.0000	0.0600	0.0378	0.1609

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8815	10.9256	1.1546	609.5109	26.6827	243.0674	1.8842

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
166572.969	0.447	613.484	596196.750	0.975931E-03

Melt Ratio at Stator LE, Throat, TE
0.35617E+00 0.39416E+00 0.49204E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.137 EfDer = 1.000 SH = 0.104289E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.173	3705.867	10.926	609.506	1.000	1.000	0.980

W Kg/sec = 29.624 Wdry = 65.105 WH2O = 0.068 lbm/sec H2O = 0.765g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
95.054	3418.669	1.379	0.250	53.382	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
85602.305	51116.852	1.830	509.668	278.466	384.739	1.382

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	403.09	-0.14	403.09	0.34	0.60	546.53
MEAN	15.91	0.00	-0.02	403.09	-0.14	403.09	0.34	0.55	
HUB	13.07	0.00	-0.02	403.09	-0.14	403.09	0.34	0.49	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.78	47.36	8.42	592.46	716.70	10.10	596.50	524.18	0.64
MEAN	51.94	44.80	7.14	514.62	653.81	10.10	596.50	524.18	0.64
HUB	46.37	38.84	7.53	422.68	584.18	10.10	596.50	524.18	0.64

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	499.70	288.06	408.31	1208.28	0.41	2.05	1.78	7.43
MEAN	15.50	503.22	284.65	414.97	1204.16	0.42	2.13	1.86	5.75
HUB	12.59	535.47	329.60	422.01	1200.18	0.45	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	580.18	502.04	292.11	0.42	5170.42	0.92	0.91		
MEAN	501.19	468.07	216.54	0.39	4413.60	0.92	0.91	0.91	1.54
HUB	407.16	429.08	77.56	0.36	4151.48	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.61	1.15	11.23	636.27	1.04	616.28	533.48	0.44
MEAN	12.35	1.13	10.97	632.35	1.04	612.08	532.20	0.48
HUB	12.26	1.12	10.72	630.99	1.04	608.04	531.83	0.51

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	35.20	35.58	31.50	4.08	0.93	0.44	1.40
MEAN	34.45	27.56	23.50	4.06	0.93	0.42	1.64
HUB	37.99	10.41	6.50	3.91	0.93	0.40	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	558.7830	289.8694	477.7177	1200.2886	0.4655	-0.1941	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.3780	10.6916	608.2114	532.5746	0.5129	31.2485	33.0000	1.7515

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   482.8365   110.2561   470.0794  1206.5131     0.4002     0.0751     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.3528    11.0788   614.5370   532.3433   410.5396     0.0376     0.3503

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   467.9264     0.0000   467.9264  1207.5790     0.3875     0.2741     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.1539   615.6580   532.3252     0.0000     0.0600     0.0377     0.1274

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8836    12.3527     1.1306   633.1782    23.6993   250.4996     1.9419

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 148082.281       0.440     545.383  606799.063   0.108618E-02

Melt Ratio at Stator LE, Throat, TE
0.76847E+00 0.80930E+00 0.92249E+00
 trTOT =     1.3129   Tt4 =   633.1782   T1  =   482.2695

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    941266.00   3466.6582    178.7795      2.3906      0.8667     5.3638      1.3129     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 72.7%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.708   EfDer =  0.999    SH =  0.263523E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      64.054    3676.041       5.167     482.269       1.000       1.000       0.980
  W Kg/sec =  29.116  Wdry =  64.038  WH2O = 0.017  lbm/sec   H2O =   0.113g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     175.712    3812.334       1.381       0.249      53.357      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 143407.625   50255.051       1.617     831.557     514.402     619.754       1.205

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   413.90    -0.14   413.90     0.39     0.74   686.32
 MEAN    17.06     0.00    -0.02   413.90    -0.14   413.90     0.39     0.65
 HUB     12.51     0.00    -0.02   413.90    -0.14   413.90     0.39     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.98    50.47     7.51   661.80   780.69     4.65   468.50   465.86     5.98
 MEAN    52.91    47.20     5.71   547.28   686.28     4.65   468.50   465.86     5.98
 HUB     44.13    38.62     5.51   401.31   576.61     4.65   468.50   465.86     5.98

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   650.24   370.97   534.03  1075.40      0.60     7.29     6.52    16.04
 MEAN    18.04   685.06   410.69   548.30  1069.87      0.64     7.43     6.80    12.53
 HUB     15.00   789.04   538.48   576.74  1060.00      0.74     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    661.80   608.09   290.83     0.57  7656.00      0.92     0.91
 MEAN   578.59   573.43   167.89     0.54  7409.73      0.92     0.91     0.91     1.33
 HUB    481.19   579.57    57.29     0.55  8078.97      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.26   521.75     1.08   487.77   488.46     3.76
 MEAN     6.66     1.29     5.07   520.48     1.08   482.76   488.12     4.46
 HUB      6.81     1.32     4.73   523.93     1.09   473.89   490.84     6.10

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.79    28.57    24.20     4.37     0.93     0.35     1.80
 MEAN    36.83    17.02    12.70     4.32     0.92     0.30     2.22
 HUB     43.04    -5.67    -9.30     3.63     0.92     0.16     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   724.7039   409.8969   597.6456  1066.6249     0.6794    -0.0744     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.7074     4.9416   479.8505   489.2549     5.0831    34.4444    35.4000     0.9556

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   567.4122   138.8064   550.1722  1084.6125     0.5231     0.3143     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.6786     5.5550   496.1832   488.1530   554.9116     0.0269     0.4251

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   563.1907     0.0000   563.1907  1085.0039     0.5191     0.3460     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.5526   496.5700   488.2468     0.0000     0.0600     0.0395     0.3129
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8774     6.6570     1.2883   522.0505    39.7832   218.7431     1.6957

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 247578.922       0.565     896.179  685631.813   0.397243E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.710   EfDer =  1.000    SH =  0.566132E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.054    3676.041       6.657     522.050       1.000       1.000       0.980
 W Kg/sec =  29.116  Wdry =  64.018  WH2O = 0.036  lbm/sec   H2O =   0.282g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    141.901    3664.226       1.381       0.249      53.367      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 124029.164   50249.082       1.421     590.487     415.504     468.502       1.128

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   504.10    -0.17   504.10     0.46     0.76   657.10
 MEAN    18.08     0.00    -0.02   504.10    -0.17   504.10     0.46     0.70
 HUB     15.21     0.00    -0.02   504.10    -0.17   504.10     0.46     0.64

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.60     46.36     6.24   659.23   830.02     5.76   501.65   488.61     4.00
 MEAN    49.01     42.30     6.71   579.94   768.54     5.76   501.65   488.61     4.00
 HUB     44.08     37.84     6.24   487.93   701.68     5.76   501.65   488.61     4.00

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   583.25   300.52   499.87  1117.03     0.52     2.33     2.04     9.02
 MEAN    18.01   598.08   313.99   509.03  1112.90     0.54     2.40     2.13     7.35
 HUB     15.22   651.00   393.19   518.85  1109.05     0.59     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    655.06   612.83   354.54     0.55  6140.25     0.92     0.91
 MEAN   577.75   573.31   263.76     0.52  5658.13     0.92     0.91     0.91     1.45
 HUB    488.35   527.50    95.16     0.48  5988.19     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.10     1.22     6.74   553.68     1.06   526.37   503.07     2.00
 MEAN     7.98     1.20     6.57   551.19     1.06   522.48   502.12     2.23
 HUB      8.06     1.21     6.40   552.89     1.06   518.87   503.14     2.47

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.01    35.35    31.50     3.85     0.93     0.39     1.40
 MEAN    31.67    27.39    23.50     3.89     0.93     0.38     1.63
 HUB     37.16    10.39     6.50     3.89     0.93     0.39     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   665.7557   314.8741   586.5875  1107.0276     0.6014    -0.1779     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.0281     6.3061   517.0134   503.1207     2.6407    28.2264    30.6000     2.3736

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   553.5706   117.3609   540.9869  1118.7222     0.4948     0.1481     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     8.0062     6.7871   527.9917   502.4470   491.5697     0.0248     0.3007

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   578.4926     0.0000   578.4926  1116.2969     0.5182     0.2086     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6653	525.7307	502.6084	0.0000	0.0600	0.0385	0.0654

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8794	7.9860	1.1996	552.5854	30.5367	247.8415	1.9213

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
190263.984	0.443	688.712	615909.563	0.644137E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.873 EfDer = 1.000 SH = 0.761152E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.054	3676.041	7.986	552.585	1.000	1.000	0.980

W Kg/sec = 29.116 Wdry = 64.006 WH2O = 0.049 lbm/sec H2O = 0.437g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
121.697	3561.548	1.380	0.249	53.373	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
107507.922	50245.230	1.531	545.479	356.405	424.468	1.191

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	473.01	-0.16	473.01	0.42	0.71	623.76
MEAN	17.74	0.00	-0.02	473.01	-0.16	473.01	0.42	0.66	
HUB	15.05	0.00	-0.02	473.01	-0.16	473.01	0.42	0.60	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.70	46.36	7.34	643.84	799.04	7.08	534.64	502.46	2.02
MEAN	50.27	43.40	6.87	569.04	740.09	7.08	534.64	502.46	2.02
HUB	45.60	38.84	6.76	482.80	676.01	7.08	534.64	502.46	2.02

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	559.73	299.15	473.08	1149.97	0.49	2.26	1.98	8.75
MEAN	17.51	572.85	311.67	480.64	1146.24	0.50	2.34	2.07	6.78
HUB	14.85	622.68	385.78	488.78	1142.74	0.54	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	635.50	580.46	336.35	0.50	5929.33	0.92	0.91		
MEAN	561.60	541.74	249.93	0.47	5459.22	0.92	0.91	0.91	1.48
HUB	476.38	497.10	90.60	0.44	5731.35	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.55	1.20	8.14	583.09	1.06	557.97	514.91	1.17
MEAN	9.42	1.18	7.96	580.68	1.05	554.36	514.06	1.27
HUB	9.49	1.19	7.78	582.08	1.05	550.98	514.82	1.38

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.31	35.41	31.50	3.91	0.93	0.41	1.40
MEAN	32.96	27.47	23.50	3.97	0.93	0.40	1.62
HUB	38.28	10.50	6.50	4.00	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	632.6321	313.7190	549.3667	1141.5293	0.5542	-0.1633	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4727	7.7094	549.8591	514.8147	1.4350	29.7288	31.5000	1.7712

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	530.0499	115.6268	517.2845	1151.4136	0.4603	0.1517	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4538	8.1910	559.4204	514.3361	451.3937	0.0224	0.3236

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	540.7575	0.0000	540.7575	1150.4327	0.4700	0.2341	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1222	558.5000	514.3733	0.0000	0.0600	0.0377	0.1068

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8816	9.4304	1.1809	581.9411	29.3641	237.4420	1.8406

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
183143.359	0.453	662.937	590279.438	0.844853E-03

Melt Ratio at Stator LE, Throat, TE
0.67384E-01 0.88803E-01 0.15112E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.163 EfDer = 1.000 SH = 0.937514E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.054	3676.041	9.430	581.939	1.000	1.000	0.980

W Kg/sec = 29.116 Wdry = 63.994 WH2O = 0.060 lbm/sec H2O = 0.612g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
105.759	3470.555	1.380	0.249	53.379	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
94444.617	50241.746	1.657	513.330	309.783	395.845	1.278

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	441.56	-0.15	441.56	0.38	0.66	583.30
MEAN	16.97	0.00	-0.02	441.56	-0.15	441.56	0.38	0.61	
HUB	14.32	0.00	-0.02	441.56	-0.15	441.56	0.38	0.55	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.45	46.36	8.09	617.85	759.54	8.54	566.32	514.23	1.11
MEAN	50.96	43.80	7.16	544.41	701.09	8.54	566.32	514.23	1.11
HUB	46.14	37.84	8.30	459.38	637.29	8.54	566.32	514.23	1.11

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	530.20	289.91	443.92	1179.94	0.45	2.16	1.89	8.34
MEAN	16.57	539.95	297.49	450.60	1176.29	0.46	2.24	1.97	6.35
HUB	13.89	583.10	361.17	457.77	1172.82	0.50	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	605.66	544.76	315.75	0.46	5476.39	0.92	0.91		
MEAN	531.68	507.83	234.20	0.43	4933.08	0.92	0.91	0.91	1.50
HUB	445.58	465.49	84.41	0.40	5018.86	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.04	1.17	9.63	610.09	1.05	587.56	524.73	0.71
MEAN	10.87	1.15	9.43	607.29	1.04	583.93	523.79	0.77
HUB	10.90	1.16	9.22	607.73	1.04	580.49	524.09	0.83

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.15	35.42	31.50	3.92	0.93	0.42	1.40
MEAN	33.43	27.46	23.50	3.96	0.93	0.41	1.62
HUB	38.27	10.45	6.50	3.95	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	581.4450	299.1591	498.5801	1173.5641	0.4955	-0.1140	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.9187	9.2533	581.2891	524.2855	0.8189	30.9647	32.4000	1.4353

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	493.5076	110.6793	480.9364	1181.1750	0.4178	0.1726	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.9039     9.6854   588.8574   523.9855   432.2457     0.0198     0.3438

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   489.4287     0.0000   489.4287  1181.4554     0.4143     0.2571     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6815   589.1709   523.9442     0.0000     0.0600     0.0373     0.1700

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8823    10.8775     1.1535   608.3541    26.4333   240.6343     1.8654

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 165025.078       0.450     597.353  585159.750   0.996526E-03

Melt Ratio at Stator LE, Throat, TE
0.36153E+00 0.39986E+00 0.49860E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.372   EfDer =  0.999    SH =  0.106435E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.054    3676.041      10.878     608.349       1.000       1.000       0.980
 W Kg/sec =  29.116  Wdry =  63.986  WH2O = 0.068  lbm/sec   H2O =   0.780g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     93.747    3394.378       1.379       0.250      53.383      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  84196.813   50239.238       1.856     509.668     274.638     384.739       1.401

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   396.48    -0.14   396.48     0.33     0.60   542.65
 MEAN    15.91     0.00    -0.02   396.48    -0.14   396.48     0.33     0.54
 HUB     13.07     0.00    -0.02   396.48    -0.14   396.48     0.33     0.49

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.00    47.36     8.64   587.70   709.04    10.08   595.77   523.83     0.66
 MEAN    52.17    44.80     7.37   510.48   646.47    10.08   595.77   523.83     0.66
 HUB     46.61    38.84     7.77   419.28   577.15    10.08   595.77   523.83     0.66

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   494.50   288.06   401.94  1207.34      0.41     2.05     1.78     7.43
 MEAN    15.50   497.53   284.09   408.45  1203.24      0.41     2.13     1.86     5.75
 HUB     12.59   528.98   327.60   415.32  1199.28      0.44     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    575.51   494.15   287.45     0.41  5170.23      0.92     0.91
 MEAN   497.16   460.68   213.06     0.38  4404.93      0.92     0.91     0.91     1.54
 HUB    403.88   422.27    76.28     0.35  4126.31      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.54     1.15    11.19   634.89     1.04   615.32   533.10     0.46
 MEAN    12.28     1.13    10.94   630.96     1.04   611.15   531.80     0.50
 HUB     12.19     1.12    10.69   629.53     1.03   607.13   531.41     0.54

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.63    35.57    31.50     4.07     0.93     0.45     1.40
 MEAN    34.82    27.55    23.50     4.05     0.93     0.42     1.64
 HUB     38.27    10.41     6.50     3.91     0.93     0.41     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   551.8159   289.3020   469.8991  1199.5121     0.4600    -0.1918     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.3105    10.6693   607.4245   532.1727     0.5326    31.6193    33.0000     1.3807
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   474.8709   108.4372   462.3243  1205.7313     0.3938     0.0848     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.2871    11.0571   613.7412   531.9410   410.5396     0.0367     0.3555

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   460.3155     0.0000   460.3155  1206.7534     0.3814     0.2799     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.1286   614.8168   531.9224     0.0000     0.0600     0.0373     0.1359

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8841    12.2864     1.1295   631.7708    23.4490   248.3965     1.9256

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 146525.219       0.442     530.388  596180.750   0.110828E-02

Melt Ratio at Stator LE, Throat, TE
0.77552E+00 0.81657E+00 0.93020E+00
 trTOT =     1.3100   Tt4 =   631.7708   T1  =   482.2694

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    932536.50   3375.5701    175.7116      2.3778      0.8687      5.7078      1.3100     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 69.9%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 6.047   EfDer =  0.999    SH =  0.267217E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     62.941    3645.648       5.167     482.269       1.000       1.000       0.980
  W Kg/sec =  28.610  Wdry =  62.924  WH2O = 0.017  lbm/sec   H2O =   0.115g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     172.658    3780.815       1.381       0.249      53.357      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 140477.078   49381.598       1.645     831.557     505.464     619.754       1.226

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   405.44    -0.14   405.44     0.38     0.73   680.64
 MEAN    17.06     0.00    -0.02   405.44    -0.14   405.44     0.38     0.64
 HUB     12.51     0.00    -0.02   405.44    -0.14   405.44     0.38     0.54

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.30    50.47     7.83   656.33   771.58      4.67   469.06   465.85     5.94
 MEAN    53.25    47.20     6.05   542.76   677.58      4.67   469.06   465.85     5.94
 HUB     44.48    38.62     5.86   398.00   568.24      4.67   469.06   465.85     5.94

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   641.43   371.73   522.73  1076.14      0.60     7.29     6.52    16.04
 MEAN    18.04   675.04   409.55   536.61  1070.61      0.63     7.43     6.80    12.53
 HUB     15.00   775.81   533.20   563.54  1061.02      0.73     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    656.33   595.18   284.59     0.55  7671.77      0.92     0.91
 MEAN   573.80   561.18   164.25     0.52  7389.08      0.92     0.91     0.91     1.34
 HUB    477.21   566.32    55.98     0.53  7999.69      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.70     1.30     5.29   521.50     1.08   488.43   488.32     3.74
 MEAN     6.64     1.29     5.10   520.06     1.08   483.43   487.87     4.44
 HUB      6.77     1.31     4.77   523.18     1.08   474.80   490.38     6.00

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.42    28.57    24.20     4.37     0.93     0.36     1.80
 MEAN    37.35    17.02    12.70     4.32     0.93     0.31     2.22
 HUB     43.42    -5.67    -9.30     3.63     0.93     0.17     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   712.9751   408.7568   584.1672  1067.6029     0.6678    -0.0719     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6885     4.9769   480.7333   488.9636     5.0162    34.9815    35.4000     0.4185

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   555.3280   135.8502   538.4551  1085.2847     0.5117     0.3231     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6616     5.5842   496.8008   487.9067   554.9116     0.0262     0.4321

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   551.0238     0.0000   551.0238  1085.6748     0.5075     0.3544     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5835   497.1865   488.0070     0.0000     0.0600     0.0380     0.3227
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8799     6.6422     1.2855   521.5773    39.3102   216.6372     1.6794

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 244641.438       0.568     870.156  671621.063   0.405074E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.052   EfDer =  1.000    SH =  0.578866E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     62.941    3645.648       6.642     521.577       1.000       1.000       0.980
 W Kg/sec =  28.610  Wdry =  62.905  WH2O = 0.036  lbm/sec   H2O =   0.289g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    139.682    3635.578       1.381       0.249      53.367      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 121528.141   49375.559       1.444     590.487     409.012     468.502       1.145

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   493.94    -0.17   493.94     0.45     0.75   651.96
 MEAN    18.08     0.00    -0.02   493.94    -0.17   493.94     0.45     0.70
 HUB     15.21     0.00    -0.02   493.94    -0.17   493.94     0.45     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.94     46.36     6.58   653.78   819.53     5.78   501.99   488.39     4.05
 MEAN    49.35     42.30     7.05   575.15   758.26     5.78   501.99   488.39     4.05
 HUB     44.42     37.84     6.58   483.90   691.59     5.78   501.99   488.39     4.05

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   575.93   301.99   490.41  1117.14     0.52     2.33     2.04     9.02
 MEAN    18.01   590.13   314.37   499.42  1112.98     0.53     2.40     2.13     7.35
 HUB     15.22   641.96   391.10   509.08  1109.10     0.58     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    649.65   601.14   347.65     0.54  6170.20     0.92     0.91
 MEAN   572.97   562.41   258.61     0.51  5664.80     0.92     0.91     0.91     1.46
 HUB    484.31   517.54    93.21     0.47  5956.24     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.07     1.22     6.75   553.09     1.06   526.46   502.85     2.04
 MEAN     7.95     1.20     6.58   550.51     1.06   522.56   501.85     2.28
 HUB      8.02     1.21     6.41   552.00     1.06   518.92   502.78     2.53

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.62    35.33    31.50     3.83     0.93     0.40     1.40
 MEAN    32.19    27.38    23.50     3.88     0.93     0.39     1.63
 HUB     37.53    10.38     6.50     3.88     0.93     0.40     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   655.3909   315.2486   574.5916  1107.4333     0.5918    -0.1735     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   7.9999     6.3306   517.3950   502.8204     2.6743    28.7513    30.6000     1.8487

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   542.4855   115.0108   530.1537  1118.9912     0.4848     0.1596     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     7.9799     6.8088   528.2490   502.1588   491.5697     0.0240     0.3081

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   566.5323     0.0000   566.5323  1116.6982     0.5073     0.2169     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6926	526.1119	502.3145	0.0000	0.0600	0.0378	0.0786

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8806	7.9601	1.1984	551.8665	30.2909	244.7732	1.8975

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
188740.281	0.447	671.324	603099.688	0.658780E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 7.166 EfDer = 1.000 SH = 0.778304E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
62.941	3645.648	7.960	551.866	1.000	1.000	0.980

W Kg/sec = 28.610 Wdry = 62.892 WH2O = 0.049 lbm/sec H2O = 0.447g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
119.893	3534.401	1.380	0.249	53.374	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
105516.695	49371.688	1.554	545.479	351.128	424.468	1.209

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	464.25	-0.16	464.25	0.41	0.70	619.01
MEAN	17.74	0.00	-0.02	464.25	-0.16	464.25	0.41	0.65	
HUB	15.05	0.00	-0.02	464.25	-0.16	464.25	0.41	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.99	46.36	7.63	638.51	789.57	7.09	534.58	502.19	2.07
MEAN	50.57	43.40	7.17	564.34	730.88	7.09	534.58	502.19	2.07
HUB	45.89	38.84	7.05	478.80	667.03	7.09	534.58	502.19	2.07

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	553.19	299.89	464.85	1149.64	0.48	2.26	1.98	8.75
MEAN	17.51	565.75	311.50	472.27	1145.91	0.49	2.34	2.07	6.78
HUB	14.85	614.63	383.55	480.27	1142.40	0.54	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	630.24	570.28	330.35	0.50	5944.06	0.92	0.91		
MEAN	556.96	532.25	245.45	0.46	5456.19	0.92	0.91	0.91	1.49
HUB	472.44	488.43	88.89	0.43	5698.12	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.51	1.19	8.13	582.20	1.05	557.65	514.61	1.20
MEAN	9.38	1.18	7.95	579.71	1.05	554.04	513.73	1.31
HUB	9.44	1.19	7.77	580.94	1.05	550.65	514.42	1.43

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.83	35.40	31.50	3.90	0.93	0.41	1.40
MEAN	33.41	27.46	23.50	3.96	0.93	0.40	1.62
HUB	38.61	10.49	6.50	3.99	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	623.7644	313.5476	539.2308	1141.4178	0.5465	-0.1601	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4289	7.7164	549.7540	514.4660	1.4729	30.1768	31.5000	1.3232

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	520.3900	113.5196	507.8574	1151.2198	0.4520	0.1617	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4114	8.1954	559.2352	513.9894	451.3937	0.0218	0.3299

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	530.7734	0.0000	530.7734	1150.2844	0.4614	0.2411	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1292	558.3589	514.0262	0.0000	0.0600	0.0372	0.1172

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8823	9.3884	1.1794	580.9412	29.0832	234.9673	1.8215

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
181400.219	0.457	645.216	578774.250	0.863279E-03

Melt Ratio at Stator LE, Throat, TE
0.68656E-01 0.90440E-01 0.15371E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.410 EfDer = 0.999 SH = 0.957159E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
62.941	3645.648	9.388	580.939	1.000	1.000	0.980

W Kg/sec = 28.610 Wdry = 62.881 WH2O = 0.060 lbm/sec H2O = 0.625g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
104.296	3444.822	1.380	0.249	53.379	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
92843.328	49368.215	1.680	513.330	305.501	395.845	1.296

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	434.07	-0.15	434.07	0.37	0.65	578.97
MEAN	16.97	0.00	-0.02	434.07	-0.15	434.07	0.37	0.60	
HUB	14.32	0.00	-0.02	434.07	-0.15	434.07	0.37	0.54	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.69	46.36	8.33	612.74	751.04	8.53	565.84	513.90	1.15
MEAN	51.21	43.80	7.41	539.91	692.88	8.53	565.84	513.90	1.15
HUB	46.39	37.84	8.55	455.58	629.37	8.53	565.84	513.90	1.15

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	524.37	290.07	436.83	1179.21	0.44	2.16	1.89	8.34
MEAN	16.57	533.62	296.94	443.38	1175.57	0.45	2.24	1.97	6.35
HUB	13.89	575.94	358.95	450.40	1172.10	0.49	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	600.65	535.98	310.58	0.45	5479.47	0.92	0.91		
MEAN	527.29	499.65	230.35	0.43	4923.90	0.92	0.91	0.91	1.51
HUB	441.90	457.98	82.95	0.39	4987.96	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.98	1.17	9.60	608.87	1.05	586.84	524.35	0.74
MEAN	10.81	1.15	9.40	606.04	1.04	583.22	523.39	0.80
HUB	10.83	1.15	9.20	606.36	1.04	579.79	523.65	0.86

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.59	35.41	31.50	3.91	0.93	0.42	1.40
MEAN	33.81	27.45	23.50	3.95	0.93	0.41	1.62
HUB	38.55	10.44	6.50	3.94	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	574.0943	298.6048	490.3259	1172.9562	0.4894	-0.1122	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.8559	9.2361	580.6879	523.8795	0.8483	31.3411	32.4000	1.0589

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	485.3725	108.8549	473.0085	1180.5276	0.4111	0.1805	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.8421	9.6661	588.2133	523.5779	432.2457	0.0194	0.3491

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	481.3651	0.0000	481.3651	1180.7972	0.4077	0.2629	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.6620	588.5157	523.5381	0.0000	0.0600	0.0370	0.1777

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8828	10.8163	1.1521	607.0710	26.1505	238.5211	1.8490

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
163267.281	0.453	580.720	574395.125	0.101714E-02

Melt Ratio at Stator LE, Throat, TE
0.36491E+00 0.40347E+00 0.50278E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.574 EfDer = 0.999 SH = 0.108602E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
62.941	3645.648	10.816	607.066	1.000	1.000	0.980

W Kg/sec = 28.610 Wdry = 62.873 WH2O = 0.068 lbm/sec H2O = 0.794g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
92.541	3369.870	1.379	0.250	53.384	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
82895.313	49365.711	1.880	509.668	271.110	384.739	1.419

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	390.35	-0.13	390.35	0.33	0.59	538.73
MEAN	15.91	0.00	-0.02	390.35	-0.13	390.35	0.33	0.54	
HUB	13.07	0.00	-0.02	390.35	-0.13	390.35	0.33	0.48	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	56.19	47.36	8.83	582.84	701.59	10.05	594.87	523.43	0.69
MEAN	52.37	44.80	7.57	506.26	639.38	10.05	594.87	523.43	0.69
HUB	46.82	38.84	7.98	415.81	570.42	10.05	594.87	523.43	0.69

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	489.47	287.57	396.08	1206.21	0.41	2.05	1.78	7.43
MEAN	15.50	492.09	283.20	402.44	1202.15	0.41	2.13	1.86	5.75
HUB	12.59	522.79	325.44	409.15	1198.22	0.44	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	570.75	486.90	283.18	0.40	5161.50	0.92	0.91		
MEAN	493.05	453.86	209.85	0.38	4390.99	0.92	0.91	0.91	1.55
HUB	400.54	415.99	75.11	0.35	4098.98	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.46	1.15	11.14	633.35	1.04	614.17	532.64	0.48
MEAN	12.20	1.13	10.89	629.42	1.04	610.04	531.34	0.52
HUB	12.10	1.12	10.64	627.94	1.03	606.06	530.93	0.56

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	35.98	35.56	31.50	4.06	0.93	0.45	1.40
MEAN	35.13	27.54	23.50	4.04	0.93	0.42	1.64
HUB	38.50	10.40	6.50	3.90	0.93	0.41	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	545.2303	288.3882	462.7185	1198.5415	0.4549	-0.1899	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.2265	10.6295	606.4407	531.7057	0.5549	31.9331	33.0000	1.0669

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   467.6028   106.7775   455.2482  1204.7355     0.3881     0.0928     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.2046    11.0157   612.7272   531.4735   410.5396     0.0361     0.3598

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   453.3641     0.0000   453.3641  1205.7195     0.3760     0.2846     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.0840   613.7626   531.4545     0.0000     0.0600     0.0370     0.1429

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8844    12.2033     1.1282   630.2078    23.1691   246.6353     1.9119

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 144782.156       0.444     514.970  585811.000   0.113072E-02

Melt Ratio at Stator LE, Throat, TE
0.77967E+00 0.82085E+00 0.93470E+00
 trTOT =     1.3068   Tt4 =   630.2078   T1  =   482.2693

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    922831.38   3282.3857    172.6579      2.3617      0.8702      6.0474      1.3068     37.3740
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25µm, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.948   EfDer =  0.985    SH =  0.469724E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     75.571    3889.248       5.167     462.092       1.000       1.000       0.980
  W Kg/sec =  34.350  Wdry =  75.567  WH2O = 0.004  lbm/sec   H2O =   0.020g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     202.916    4120.575       1.381       0.248      53.350      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 167507.391   59295.645       1.400     831.557     593.965     619.754       1.043

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   483.45    -0.17   483.45     0.47     0.83   741.81
 MEAN    17.06     0.00    -0.02   483.45    -0.17   483.45     0.47     0.74
 HUB     12.51     0.00    -0.02   483.45    -0.17   483.45     0.47     0.63

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.38    50.47     4.91   700.18   851.01     4.45   443.29   452.61     3.41
 MEAN    50.15    47.20     2.95   579.02   754.44     4.45   443.29   452.61     3.41
 HUB     41.30    38.62     2.68   424.59   643.54     4.45   443.29   452.61     3.41

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   726.09   354.63   633.59  1043.99     0.70     7.29     6.52    16.04
 MEAN    18.04   770.86   412.33   651.31  1038.60     0.74     7.43     6.80    12.53
 HUB     15.00   909.87   579.49   701.46  1024.88     0.89     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    700.18   721.70   345.55     0.69  7319.48     0.92     0.90
 MEAN   612.14   681.27   199.81     0.66  7439.72     0.92     0.90     0.90     1.21
 HUB    509.10   704.99    70.39     0.69  8694.43     0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.78     1.31     4.93   502.05     1.09   459.65   478.45     1.83
 MEAN     6.81     1.32     4.74   502.71     1.09   454.92   478.95     2.20
 HUB      7.12     1.38     4.29   509.56     1.10   442.97   483.37     3.60

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.24    28.61    24.20     4.41     0.93     0.27     1.80
 MEAN    32.34    17.06    12.70     4.36     0.91     0.22     2.22
 HUB     39.56    -5.73    -9.30     3.57     0.91     0.07     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.985       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   832.5673   411.5339   723.7458  1031.8522     0.8069    -0.1061     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.8819     4.5042   449.0211   480.3107     2.8296    29.6233    35.4000     5.7767

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   677.7724   165.8038   657.1792  1053.2300     0.6435     0.2307     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.8113     5.1721   467.8262   479.7078   554.9116     0.0413     0.3608

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   679.3276     0.0000   679.3276  1053.0200     0.6451     0.2564     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.1138	467.6601	479.5954	0.0000	0.0600	0.0715	0.2048

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8257	6.7433	1.3050	504.7716	42.6812	237.4391	1.8406

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
265365.656	0.541	1133.267	863373.250	0.532208E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.581 EfDer = 0.990 SH = 0.599554E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
75.571	3889.248	6.743	504.771	1.000	1.000	0.980

W Kg/sec = 34.350 Wdry = 75.566 WH2O = 0.005 lbm/sec H2O = 0.030g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
162.513	3942.542	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
146440.594	59295.340	1.241	590.487	475.709	468.502	0.985

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	595.20	-0.20	595.20	0.56	0.86	707.01
MEAN	18.08	0.00	-0.02	595.20	-0.20	595.20	0.56	0.80	
HUB	15.21	0.00	-0.02	595.20	-0.20	595.20	0.56	0.74	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.53	46.36	3.17	697.47	917.07	5.46	476.28	479.51	1.13
MEAN	45.88	42.30	3.58	613.58	854.98	5.46	476.28	479.51	1.13
HUB	40.95	37.84	3.11	516.23	788.01	5.46	476.28	479.51	1.13

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	646.69	276.15	584.76	1090.92	0.59	2.33	2.04	9.02
MEAN	18.01	666.37	301.29	594.36	1087.40	0.61	2.40	2.13	7.35
HUB	15.22	727.44	403.97	604.96	1084.23	0.67	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	693.06	718.16	416.91	0.66	5643.21	0.92	0.91		
MEAN	611.26	670.33	309.97	0.62	5429.99	0.92	0.91	0.91	1.37
HUB	516.67	615.37	112.70	0.57	6152.69	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.19	1.22	6.48	535.57	1.06	501.95	495.29	0.48
MEAN	8.14	1.21	6.33	534.41	1.06	498.70	494.75	0.53
HUB	8.34	1.24	6.19	538.35	1.07	495.80	496.69	0.58

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.28	35.49	31.50	3.99	0.93	0.32	1.40
MEAN	26.88	27.54	23.50	4.04	0.92	0.32	1.63
HUB	33.73	10.55	6.50	4.05	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.990	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	763.3330	302.1395	700.9914	1077.0278	0.7087	-0.2346	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2028	5.8896	489.2650	495.6675	0.7238	23.3169	30.6000	7.2831

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	659.3419	139.7852	644.3538	1090.0507	0.6049	0.0247	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.1440	6.3791	501.1576	495.4046	491.5697	0.0411	0.2231

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	701.4002	0.0000	701.4002	1085.0177	0.6464	0.1012	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.1237	496.5592	495.3409	0.0000	0.0600	0.0731	-0.1104

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8265	8.0837	1.1988	536.1110	31.3412	279.7914	2.1689

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
194933.641	0.406	832.481	781240.563	0.626304E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.942 EfDer = 0.992 SH = 0.670532E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
75.571	3889.248	8.084	536.111	1.000	1.000	0.980

W Kg/sec = 34.350 Wdry = 75.566 WH2O = 0.005 lbm/sec H2O = 0.039g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
139.711	3825.573	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
126121.117	59295.180	1.334	545.479	408.982	424.468	1.038

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	554.91	-0.19	554.91	0.50	0.80	670.01
MEAN	17.74	0.00	-0.02	554.91	-0.19	554.91	0.50	0.74	
HUB	15.05	0.00	-0.02	554.91	-0.19	554.91	0.50	0.69	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.84	46.36	4.48	681.18	878.74	6.81	511.36	495.22	0.39
MEAN	47.34	43.40	3.94	602.05	818.91	6.81	511.36	495.22	0.39
HUB	42.64	38.84	3.80	510.80	754.34	6.81	511.36	495.22	0.39

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	617.31	279.02	550.66	1126.90	0.55	2.26	1.98	8.75
MEAN	17.51	635.10	301.98	558.71	1123.63	0.57	2.34	2.07	6.78
HUB	14.85	692.86	397.33	567.61	1120.65	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	672.35	676.71	393.34	0.60	5531.15	0.92	0.91		
MEAN	594.17	630.50	292.20	0.56	5289.95	0.92	0.91	0.91	1.40
HUB	504.01	577.55	106.68	0.52	5903.23	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.68	1.20	7.92	566.29	1.06	535.66	508.63	0.20
MEAN	9.61	1.19	7.76	564.98	1.05	532.55	508.09	0.21
HUB	9.80	1.21	7.59	568.32	1.06	529.73	509.53	0.23

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.87	35.54	31.50	4.04	0.93	0.34	1.40
MEAN	28.39	27.61	23.50	4.11	0.92	0.34	1.62
HUB	34.99	10.64	6.50	4.14	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	715.9479	303.9574	648.2216	1115.9476	0.6416	-0.2038	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.6781	7.3613	525.3329	508.7699	0.2619	25.1223	31.5000	6.3777

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	625.4100	136.4290	610.3481	1126.2764	0.5553	0.0383	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.6305	7.8305	535.0913	508.6089	451.3937	0.0345	0.2556

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	642.2648	0.0000	642.2648	1124.4451	0.5712	0.1469	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.7016	533.3770	508.5310	0.0000	0.0600	0.0590	-0.0281

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8471	9.5830	1.1855	566.5280	30.4192	265.4645	2.0579

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
189267.000	0.419	808.281	738890.563	0.710208E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 4.513 EfDer = 0.995 SH = 0.784810E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
75.571	3889.248	9.583	566.527	1.000	1.000	0.980

W Kg/sec = 34.350 Wdry = 75.565 WH2O = 0.006 lbm/sec H2O = 0.052g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
121.151	3721.458	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
109747.586	59294.914	1.447	513.330	354.670	395.845	1.116

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	513.11	-0.18	513.11	0.45	0.73	625.47
MEAN	16.97	0.00	-0.02	513.11	-0.18	513.11	0.45	0.68	
HUB	14.32	0.00	-0.02	513.11	-0.18	513.11	0.45	0.62	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.88	46.36	5.52	653.69	831.15	8.35	545.37	508.48	0.17
MEAN	48.31	43.80	4.51	575.99	771.52	8.35	545.37	508.48	0.17
HUB	43.46	37.84	5.62	486.02	706.87	8.35	545.37	508.48	0.17

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	581.30	275.04	512.12	1160.04	0.50	2.16	1.89	8.34
MEAN	16.57	595.60	291.10	519.62	1156.60	0.51	2.24	1.97	6.35
HUB	13.89	646.26	372.99	527.76	1153.41	0.56	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	640.79	629.31	365.75	0.54	5196.16	0.92	0.91		
MEAN	562.52	586.24	271.42	0.51	4827.66	0.92	0.91	0.91	1.42
HUB	471.43	536.86	98.43	0.47	5183.41	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.26	1.18	9.51	594.87	1.05	567.72	519.79	0.10
MEAN	11.14	1.16	9.31	592.86	1.05	564.35	519.03	0.11
HUB	11.26	1.17	9.12	594.80	1.05	561.24	519.80	0.12

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	28.24	35.53	31.50	4.03	0.93	0.36	1.40
MEAN	29.26	27.58	23.50	4.08	0.92	0.36	1.62
HUB	35.25	10.57	6.50	4.07	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	648.8963	292.7375	579.1124	1152.4419	0.5631	-0.1362	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
11.1998	9.0554	560.3492	519.5266	0.1236	26.8163	32.4000	5.5837

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   574.1721   128.7700   559.5461  1159.9696     0.4950     0.0782     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    11.1647    9.4633   567.6902   519.4277   432.2457     0.0284     0.2849

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   569.6044     0.0000   569.6044  1160.3737     0.4909     0.1880     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.4585   568.1121   519.3638     0.0000     0.0600     0.0471     0.0757

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8629    11.1291     1.1613   594.1732    27.6476   265.9333     2.0615

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 172104.078       0.419     734.985  724008.813   0.853981E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.093   EfDer =  0.997    SH =  0.993038E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     75.571    3889.248      11.129     594.173       1.000       1.000       0.980
 W Kg/sec =  34.350  Wdry =  75.563  WH2O = 0.008  lbm/sec   H2O =   0.075g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    106.834    3633.853       1.381       0.249      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  96633.797   59294.426       1.629     509.668     312.783     384.739       1.230

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   455.04    -0.16   455.04     0.39     0.66   580.93
 MEAN    15.91     0.00    -0.02   455.04    -0.16   455.04     0.39     0.60
 HUB     13.07     0.00    -0.02   455.04    -0.16   455.04     0.39     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.81    47.36     6.45   621.78   770.63    10.04   577.54   519.35     0.10
 MEAN    49.89    44.80     5.09   540.09   706.35    10.04   577.54   519.35     0.10
 HUB     44.28    38.84     5.44   443.60   635.60    10.04   577.54   519.35     0.10

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   536.88   280.16   457.99  1190.90      0.45     2.05     1.78     7.43
 MEAN    15.50   544.52   282.02   465.80  1186.67      0.46     2.13     1.86     5.75
 HUB     12.59   583.05   339.44   474.06  1182.65      0.49     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    608.89   563.75   328.72     0.47  5028.96      0.92     0.91
 MEAN   525.99   525.83   243.97     0.44  4373.09      0.92     0.91     0.91     1.47
 HUB    427.31   482.13    87.86     0.41  4275.63      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.92     1.16    11.26   621.59     1.05   598.44   529.44     0.07
 MEAN    12.68     1.14    11.00   618.01     1.04   594.20   528.18     0.07
 HUB     12.64     1.14    10.73   617.48     1.04   590.18   528.00     0.08

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.45    35.67    31.50     4.17     0.93     0.40     1.40
 MEAN    31.19    27.64    23.50     4.14     0.92     0.38     1.64
 HUB     35.60    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   611.6030   287.1888   539.9822  1181.4098     0.5177    -0.2169     2.0437
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    Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
   12.7141    10.6152   588.9925   528.5021     0.0818    28.0062    33.0000     4.9938

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   547.3007   124.9766   532.8404  1187.3997     0.4609    -0.0172     2.1315

   BlockageTh  PtTh       PsTh       TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.6615    10.9660   594.9742   528.3849   410.5396     0.0500     0.3050

    VANED DIFFUSER EXIT:
   R4         C4         Cu4        Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   528.9415     0.0000   528.9415  1188.9554     0.4449     0.2215     0.5109

   Blockage4   Ps4       Ts4        TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.0801   596.5615   528.3980     0.0000     0.0600     0.0450     0.0479

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
    0.8700    12.6702     1.1385   619.0217    24.8522   270.1905     2.0945

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 154792.781       0.418     661.056  729403.563   0.107762E-03

Melt Ratio at Stator LE, Throat, TE
0.50478E-01 0.58862E-01 0.82333E-01
 trTOT =     1.3396   Tt4 =   619.0217   T1  =   462.0915

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    976463.13   4170.0693    202.9162      2.4520      0.8266      2.9481      1.3396     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 75.6%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.297   EfDer =  0.998    SH =  0.493950E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     66.709    3626.421       5.167     462.091       1.000       1.000       0.980
  W Kg/sec =  30.322  Wdry =  66.705  WH2O = 0.003  lbm/sec   H2O =   0.022g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     179.119   3842.115       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 143591.359   52341.773       1.586     831.557     524.310     619.754       1.182

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   414.43    -0.14   414.43     0.40     0.75   691.68
 MEAN    17.06     0.00    -0.02   414.43    -0.14   414.43     0.40     0.66
 HUB     12.51     0.00    -0.02   414.43    -0.14   414.43     0.40     0.56

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.60    50.47     7.13   652.87   773.42     4.63   448.28   452.56     2.90
 MEAN    52.50    47.20     5.30   539.89   680.73     4.63   448.28   452.56     2.90
 HUB     43.70    38.62     5.08   395.90   573.23     4.63   448.28   452.56     2.90

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   646.00   361.07   535.67  1051.69      0.61     7.29     6.52    16.04
 MEAN    18.04   681.40   402.31   549.97  1046.30      0.65     7.43     6.80    12.53
 HUB     15.00   786.86   532.27   579.51  1036.34      0.76     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    652.87   609.99   291.79     0.58  7451.89      0.92     0.91
 MEAN   570.78   575.19   168.47     0.55  7258.43      0.92     0.91     0.91     1.31
 HUB    474.70   582.36    57.58     0.56  7985.90      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.22   500.02     1.08   466.46   477.22     1.52
 MEAN     6.67     1.29     5.03   499.04     1.08   461.70   476.72     1.82
 HUB      6.84     1.32     4.69   502.74     1.09   452.95   479.12     2.57

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.98    28.58    24.20     4.38     0.93     0.34     1.80
 MEAN    36.19    17.03    12.70     4.33     0.92     0.29     2.22
 HUB     42.57    -5.67    -9.30     3.63     0.92     0.15     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   722.2761   401.5242   600.3841  1042.8372     0.6926    -0.0776     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7220     4.8957   458.6449   477.6890     2.0783    33.7738    35.4000     1.6262

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth          Machth     cp 2-Th     Stat Chord
   18.0711   569.4250   139.2987   552.1238  1060.7289     0.5368     0.3027     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6906     5.5121   474.5242   477.3631   554.9116     0.0278     0.4159

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   565.4493     0.0000   565.4493  1061.1149     0.5329     0.3348     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5070   474.8890   477.3253     0.0000     0.0600     0.0418     0.2999
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8740     6.6660     1.2901   500.5993    38.5102   221.4025     1.7163

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 239451.484       0.562     902.674  740104.250   0.579543E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.267   EfDer =  1.000    SH =  0.674552E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     66.709    3626.421       6.666     500.599       1.000       1.000       0.980
 W Kg/sec =  30.322  Wdry =  66.704  WH2O = 0.004  lbm/sec   H2O =   0.035g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    144.517    3691.402       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 124277.852   52341.402       1.396     590.487     423.036     468.502       1.107

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   505.12    -0.17   505.12     0.47     0.77   661.97
 MEAN    18.08     0.00    -0.02   505.12    -0.17   505.12     0.47     0.72
 HUB     15.21     0.00    -0.02   505.12    -0.17   505.12     0.47     0.65

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.17    46.36     5.81   650.34   823.59      5.73   480.08   477.31     1.13
 MEAN    48.57    42.30     6.27   572.11   763.32      5.73   480.08   477.31     1.13
 HUB     43.63    37.84     5.79   481.34   697.86      5.73   480.08   477.31     1.13

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   578.97   291.00   500.53  1093.04      0.53     2.33     2.04     9.02
 MEAN    18.01   594.24   305.71   509.57  1089.06      0.55     2.40     2.13     7.35
 HUB     15.22   647.22   386.33   519.27  1085.37      0.60     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    646.22   613.77   355.23     0.56  5945.71      0.92     0.91
 MEAN   569.95   574.01   264.24     0.53  5509.01      0.92     0.91     0.91     1.44
 HUB    481.75   527.96    95.42     0.49  5883.77      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.10     1.22     6.71   530.86     1.06   503.90   493.28     0.52
 MEAN     7.99     1.20     6.54   528.63     1.06   500.24   492.20     0.58
 HUB      8.08     1.21     6.37   530.54     1.06   496.86   493.19     0.65

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     30.17    35.36    31.50     3.86     0.93     0.38     1.40
 MEAN    30.96    27.41    23.50     3.91     0.93     0.37     1.63
 HUB     36.65    10.41     6.50     3.91     0.93     0.38     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   663.4968   306.5702   588.4239  1082.8969     0.6127    -0.1840     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.0429     6.2613   494.6186   492.9309     0.7031    27.5196    30.6000     3.0804

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   555.2404   117.7149   542.6188  1094.4501     0.5073     0.1319     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.0184     6.7410   505.2248   492.7729   491.5697     0.0262     0.2902

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   580.8914     0.0000   580.8914  1091.8911     0.5320     0.1958     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6102	502.8837	492.7574	0.0000	0.0600	0.0407	0.0457

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8765	7.9963	1.1996	530.0098	29.4122	252.0497	1.9539

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
182945.813	0.438	689.661	664989.000	0.713650E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.458 EfDer = 1.000 SH = 0.776016E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
66.709	3626.421	7.996	530.009	1.000	1.000	0.980

W Kg/sec = 30.322 Wdry = 66.703 WH2O = 0.005 lbm/sec H2O = 0.046g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
123.964	3587.521	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
107630.617	52341.188	1.503	545.479	362.887	424.468	1.170

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	473.55	-0.16	473.55	0.43	0.72	628.31
MEAN	17.74	0.00	-0.02	473.55	-0.16	473.55	0.43	0.67	
HUB	15.05	0.00	-0.02	473.55	-0.16	473.55	0.43	0.61	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.30	46.36	6.94	635.15	792.38	7.05	511.98	492.70	0.45
MEAN	49.86	43.40	6.46	561.36	734.55	7.05	511.98	492.70	0.45
HUB	45.17	38.84	6.33	476.28	671.75	7.05	511.98	492.70	0.45

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	555.22	290.20	473.34	1125.67	0.49	2.26	1.98	8.75
MEAN	17.51	568.77	303.85	480.81	1122.07	0.51	2.34	2.07	6.78
HUB	14.85	618.69	379.21	488.85	1118.71	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	626.92	580.89	336.72	0.52	5752.15	0.92	0.91		
MEAN	554.02	542.00	250.17	0.48	5322.20	0.92	0.91	0.91	1.47
HUB	469.95	497.20	90.74	0.44	5633.67	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.56	1.20	8.11	559.27	1.06	534.49	506.18	0.24
MEAN	9.44	1.18	7.93	557.09	1.05	531.08	505.23	0.27
HUB	9.53	1.19	7.76	558.67	1.05	527.90	505.96	0.29

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.51	35.43	31.50	3.93	0.93	0.40	1.40
MEAN	32.29	27.49	23.50	3.99	0.93	0.39	1.62
HUB	37.80	10.52	6.50	4.02	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	629.6006	305.8401	550.3260	1117.1680	0.5636	-0.1680	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4911	7.6708	526.4857	505.7970	0.3061	29.0628	31.5000	2.4372

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	531.0481	115.8446	518.2587	1126.8822	0.4713	0.1365	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4701	8.1494	535.6777	505.6934	451.3937	0.0233	0.3139

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	541.9781	0.0000	541.9781	1125.8671	0.4814	0.2232	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.0770	534.7369	505.6586	0.0000	0.0600	0.0386	0.0905

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8800	9.4461	1.1813	558.3417	28.3340	241.1620	1.8695

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
176300.547	0.449	664.610	636311.813	0.833251E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.779 EfDer = 1.000 SH = 0.935676E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
66.709	3626.421	9.446	558.341	1.000	1.000	0.980

W Kg/sec = 30.322 Wdry = 66.702 WH2O = 0.006 lbm/sec H2O = 0.064g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
107.706	3495.315	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
94453.492	52340.863	1.628	513.330	315.313	395.845	1.255

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	441.60	-0.15	441.60	0.39	0.66	587.46
MEAN	16.97	0.00	-0.02	441.60	-0.15	441.60	0.39	0.61	
HUB	14.32	0.00	-0.02	441.60	-0.15	441.60	0.39	0.56	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.08	46.36	7.72	609.51	752.80	8.52	542.67	505.64	0.23
MEAN	50.58	43.80	6.78	537.06	695.42	8.52	542.67	505.64	0.23
HUB	45.75	37.84	7.91	453.18	632.87	8.52	542.67	505.64	0.23

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	525.60	281.74	443.71	1155.43	0.45	2.16	1.89	8.34
MEAN	16.57	535.80	290.29	450.35	1151.88	0.47	2.24	1.97	6.35
HUB	13.89	579.12	355.12	457.46	1148.52	0.50	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	597.49	544.59	315.75	0.47	5322.18	0.92	0.91		
MEAN	524.51	507.61	234.22	0.44	4813.79	0.92	0.91	0.91	1.49
HUB	439.57	465.19	84.45	0.41	4934.74	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.06	1.17	9.61	585.41	1.05	563.21	516.86	0.14
MEAN	10.89	1.15	9.41	582.82	1.04	559.75	515.84	0.16
HUB	10.93	1.16	9.21	583.44	1.04	556.49	516.10	0.17

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.41	35.44	31.50	3.94	0.93	0.41	1.40
MEAN	32.81	27.48	23.50	3.98	0.93	0.40	1.62
HUB	37.82	10.46	6.50	3.96	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	577.8166	291.9215	498.6521	1149.0677	0.5029	-0.1168	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.9447	9.2290	557.0670	516.2567	0.1671	30.3456	32.4000	2.0544

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	493.7222	110.7274	481.1455	1156.5072	0.4269	0.1594	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.9284	9.6568	564.3055	516.1898	432.2457	0.0205	0.3347

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	489.6731	0.0000	489.6731	1156.8101	0.4233	0.2470	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.6527	564.6268	516.1437	0.0000	0.0600	0.0381	0.1567

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8808	10.9012	1.1540	583.8862	25.5468	244.0816	1.8921

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
159028.000	0.445	599.497	629968.000	0.102909E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.92996E-02

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.022 EfDer = 1.000 SH = 0.118128E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
66.709	3626.421	10.901	583.886	1.000	1.000	0.980

W Kg/sec = 30.322 Wdry = 66.701 WH2O = 0.008 lbm/sec H2O = 0.090g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
95.440	3418.001	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
84113.250	52340.363	1.824	509.668	279.425	384.739	1.377

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	396.08	-0.14	396.08	0.34	0.60	546.43
MEAN	15.91	0.00	-0.02	396.08	-0.14	396.08	0.34	0.55	
HUB	13.07	0.00	-0.02	396.08	-0.14	396.08	0.34	0.49	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.67	47.36	8.31	579.76	702.26	10.07	571.29	516.14	0.14
MEAN	51.82	44.80	7.02	503.59	640.80	10.07	571.29	516.14	0.14
HUB	46.25	38.84	7.41	413.62	572.78	10.07	571.29	516.14	0.14

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	489.69	280.61	401.31	1182.72	0.41	2.05	1.78	7.43
MEAN	15.50	493.33	277.60	407.82	1178.69	0.42	2.13	1.86	5.75
HUB	12.59	525.15	322.20	414.69	1174.81	0.45	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	567.74	493.45	287.13	0.42	5036.60	0.92	0.91		
MEAN	490.44	460.02	212.85	0.39	4304.26	0.92	0.91	0.91	1.53
HUB	398.43	421.64	76.23	0.36	4058.31	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.57	1.15	11.19	609.49	1.04	590.23	525.94	0.10
MEAN	12.32	1.13	10.94	605.76	1.04	586.22	524.57	0.11
HUB	12.23	1.12	10.69	604.51	1.04	582.37	524.12	0.12

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	34.96	35.58	31.50	4.08	0.93	0.44	1.40
MEAN	34.24	27.56	23.50	4.06	0.93	0.41	1.64
HUB	37.85	10.42	6.50	3.92	0.93	0.40	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	548.0867	282.6870	469.5605	1174.8690	0.4665	-0.1952	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.3462	10.6563	582.4670	524.8497	0.1163	31.0490	33.0000	1.9510

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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   474.7195   108.4026   462.1769  1180.9292     0.4020     0.0703     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500    12.3205    11.0385   588.4915   524.7764   410.5396     0.0379     0.3472

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   460.0695     0.0000   460.0695  1182.0057     0.3892     0.2706     0.5109

Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500    11.1136   589.5911   524.7751     0.0000     0.0600     0.0379     0.1226

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.8825    12.3205     1.1302   606.5837    22.7012   251.5679     1.9501

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 141387.453       0.439     532.996  641081.563   0.127592E-03

Melt Ratio at Stator LE, Throat, TE
0.63526E-01 0.72301E-01 0.95974E-01
 trTOT =     1.3127   Tt4 =   606.5837   T1  =   462.0905

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    899113.31   3389.4395    179.1194      2.3843      0.8662      5.2972      1.3127     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 72.7%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.641   EfDer =  0.999    SH =  0.497307E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      65.563    3597.110       5.167     462.090       1.000       1.000       0.980
  W Kg/sec =  29.802  Wdry =  65.560  WH2O = 0.003  lbm/sec   H2O =   0.022g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     176.045    3811.061       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 140668.266   51443.359       1.614     831.557     515.311     619.754       1.203

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   405.99    -0.14   405.99     0.39     0.74   686.09
 MEAN    17.06     0.00    -0.02   405.99    -0.14   405.99     0.39     0.65
 HUB     12.51     0.00    -0.02   405.99    -0.14   405.99     0.39     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.92    50.47     7.45   647.59   764.45     4.65   448.83   452.55     2.85
 MEAN    52.84    47.20     5.64   535.53   672.14     4.65   448.83   452.55     2.85
 HUB     44.06    38.62     5.44   392.70   564.93     4.65   448.83   452.55     2.85

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   637.10   362.14   524.17  1052.50      0.61     7.29     6.52    16.04
 MEAN    18.04   671.32   401.39   538.11  1047.11      0.64     7.43     6.80    12.53
 HUB     15.00   773.45   527.08   566.04  1037.44      0.75     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    647.59   596.86   285.45     0.57  7473.78      0.92     0.91
 MEAN   566.16   562.77   164.78     0.54  7241.78      0.92     0.91     0.91     1.33
 HUB    470.86   568.83    56.22     0.55  7907.94      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.25   499.83     1.08   467.18   477.10     1.49
 MEAN     6.65     1.29     5.06   498.66     1.08   462.41   476.49     1.79
 HUB      6.80     1.32     4.72   502.02     1.09   453.91   478.68     2.50

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.64    28.57    24.20     4.37     0.93     0.35     1.80
 MEAN    36.72    17.03    12.70     4.33     0.92     0.30     2.22
 HUB     42.96    -5.67    -9.30     3.63     0.92     0.16     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   710.3480   400.6056   586.6085  1043.9047     0.6805    -0.0748     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7045     4.9347   459.5856   477.4208     2.0241    34.3299    35.4000     1.0701

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   557.0417   136.2694   540.1168  1061.4962     0.5248     0.3121     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6755     5.5459   475.2123   477.1132   554.9116     0.0270     0.4232

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   552.9229     0.0000   552.9229  1061.8872     0.5207     0.3438     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5432   475.5817   477.0807     0.0000     0.0600     0.0398     0.3105
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8772     6.6536     1.2876   500.1653    38.0763   219.2196     1.6994

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 236755.875       0.565     877.193  725038.000   0.586584E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.627   EfDer =  1.000    SH =  0.685497E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     65.563    3597.110       6.654     500.165       1.000       1.000       0.980
 W Kg/sec =  29.802  Wdry =  65.559  WH2O = 0.004  lbm/sec   H2O =   0.036g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    142.241    3663.153       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 121723.406   51442.973       1.418     590.487     416.374     468.502       1.125

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   494.74    -0.17   494.74     0.46     0.76   656.90
 MEAN    18.08     0.00    -0.02   494.74    -0.17   494.74     0.46     0.71
 HUB     15.21     0.00    -0.02   494.74    -0.17   494.74     0.46     0.64

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.52    46.36     6.16   645.08   813.09      5.75   480.48   477.07     1.14
 MEAN    48.93    42.30     6.63   567.49   753.00      5.75   480.48   477.07     1.14
 HUB     43.99    37.84     6.15   477.45   687.67      5.75   480.48   477.07     1.14

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

        R2      C2       Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   571.52   292.89   490.77  1093.26     0.52     2.33     2.04     9.02
 MEAN    18.01   586.15   306.40   499.70  1089.24     0.54     2.40     2.13     7.35
 HUB     15.22   638.07   384.44   509.26  1085.51     0.59     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    641.00   601.70   348.11     0.55  5984.26     0.92     0.91
 MEAN   565.34   562.81   258.95     0.52  5521.25     0.92     0.91     0.91     1.45
 HUB    477.86   517.76    93.42     0.48  5854.89     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.08     1.22     6.73   530.37     1.06   504.11   493.06     0.53
 MEAN     7.97     1.20     6.56   528.04     1.06   500.41   491.92     0.59
 HUB      8.05     1.21     6.39   529.72     1.06   496.98   492.81     0.66

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     30.83    35.35    31.50     3.85     0.93     0.39     1.40
 MEAN    31.52    27.39    23.50     3.89     0.93     0.38     1.63
 HUB     37.05    10.40     6.50     3.90     0.93     0.39     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   652.8002   307.2556   575.9706  1083.4402     0.6025    -0.1790     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.0196     6.2932   495.1156   492.6302     0.7048    28.0780    30.6000     2.5220

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   543.6786   115.2637   531.3198  1094.8674     0.4966     0.1446     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     7.9974     6.7714   505.6114   492.4792   491.5697     0.0250     0.2984

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   568.2239     0.0000   568.2239  1092.4708     0.5201     0.2059     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6486	503.4190	492.4658	0.0000	0.0600	0.0388	0.0614

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8792	7.9771	1.1989	529.3747	29.2112	248.7049	1.9279

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
181696.156	0.442	673.194	651088.438	0.726518E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.780 EfDer = 1.000 SH = 0.791765E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.563	3597.110	7.977	529.374	1.000	1.000	0.980

W Kg/sec = 29.802 Wdry = 65.558 WH2O = 0.005 lbm/sec H2O = 0.047g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
122.055	3560.658	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
105547.398	51442.766	1.527	545.479	357.301	424.468	1.188

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	464.39	-0.16	464.39	0.42	0.71	623.61
MEAN	17.74	0.00	-0.02	464.39	-0.16	464.39	0.42	0.66	
HUB	15.05	0.00	-0.02	464.39	-0.16	464.39	0.42	0.60	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.61	46.36	7.25	630.01	782.80	7.07	512.04	492.42	0.46
MEAN	50.18	43.40	6.78	556.82	725.18	7.07	512.04	492.42	0.46
HUB	45.50	38.84	6.66	472.43	662.57	7.07	512.04	492.42	0.46

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	548.50	291.50	464.63	1125.52	0.49	2.26	1.98	8.75
MEAN	17.51	561.47	304.10	471.98	1121.89	0.50	2.34	2.07	6.78
HUB	14.85	610.39	377.17	479.91	1118.49	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	621.85	570.10	330.35	0.51	5777.77	0.92	0.91		
MEAN	549.54	531.99	245.44	0.47	5326.57	0.92	0.91	0.91	1.48
HUB	466.15	488.09	88.98	0.44	5603.46	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.53	1.19	8.12	558.53	1.06	534.35	505.88	0.25
MEAN	9.40	1.18	7.94	556.25	1.05	530.91	504.90	0.28
HUB	9.48	1.19	7.76	557.65	1.05	527.70	505.54	0.30

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.10	35.41	31.50	3.91	0.93	0.40	1.40
MEAN	32.79	27.48	23.50	3.98	0.93	0.40	1.62
HUB	38.16	10.50	6.50	4.00	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	620.3490	306.0950	539.5727	1117.2365	0.5553	-0.1643	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4577	7.6903	526.5505	505.4506	0.3128	29.5659	31.5000	1.9341

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	520.7269	113.5931	508.1861	1126.8895	0.4621	0.1480	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4385	8.1684	535.6856	505.3504	451.3937	0.0225	0.3210

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	531.2872	0.0000	531.2872	1125.9269	0.4719	0.2312	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.0990	534.7944	505.3166	0.0000	0.0600	0.0379	0.1026

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8812	9.4150	1.1803	557.4770	28.1044	238.3357	1.8476

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
174872.625	0.452	647.912	623803.938	0.851785E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.061 EfDer = 1.000 SH = 0.958072E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.563	3597.110	9.415	557.477	1.000	1.000	0.980

W Kg/sec = 29.802 Wdry = 65.557 WH2O = 0.006 lbm/sec H2O = 0.065g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
106.124	3469.751	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
92753.508	51442.430	1.652	513.330	310.681	395.845	1.274

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	433.65	-0.15	433.65	0.38	0.66	583.16
MEAN	16.97	0.00	-0.02	433.65	-0.15	433.65	0.38	0.61	
HUB	14.32	0.00	-0.02	433.65	-0.15	433.65	0.38	0.55	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.36	46.36	8.00	604.59	744.15	8.52	542.37	505.30	0.24
MEAN	50.86	43.80	7.06	532.72	687.03	8.52	542.37	505.30	0.24
HUB	46.04	37.84	8.20	449.51	624.70	8.52	542.37	505.30	0.24

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	519.57	282.44	436.10	1154.91	0.45	2.16	1.89	8.34
MEAN	16.57	529.26	290.18	442.62	1151.35	0.46	2.24	1.97	6.35
HUB	13.89	571.68	353.09	449.61	1147.98	0.50	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	592.66	535.18	310.22	0.46	5335.36	0.92	0.91		
MEAN	520.27	498.85	230.09	0.43	4811.94	0.92	0.91	0.91	1.50
HUB	436.02	457.19	82.92	0.40	4906.59	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.01	1.17	9.60	584.39	1.05	562.70	516.50	0.15
MEAN	10.85	1.15	9.40	581.75	1.04	559.24	515.45	0.16
HUB	10.88	1.16	9.20	582.23	1.04	555.97	515.66	0.17

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.93	35.43	31.50	3.93	0.93	0.42	1.40
MEAN	33.25	27.47	23.50	3.97	0.93	0.40	1.62
HUB	38.14	10.45	6.50	3.95	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	570.1380	291.8116	489.7993	1148.6647	0.4963	-0.1147	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.8967	9.2280	556.6755	515.8603	0.1733	30.7856	32.4000	1.6144

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	484.9305	108.7557	472.5778	1156.0891	0.4195	0.1689	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.8817	9.6562	563.8972	515.7952	432.2457	0.0199	0.3410

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	480.9526	0.0000	480.9526	1156.3806	0.4159	0.2540	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.6518	564.2071	515.7505	0.0000	0.0600	0.0375	0.1660

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8817	10.8552	1.1530	582.7866	25.3119	241.5880	1.8728

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
157565.813	0.449	583.790	618264.313	0.105457E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.10646E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.263 EfDer = 1.000 SH = 0.120875E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.563	3597.110	10.855	582.786	1.000	1.000	0.980

W Kg/sec = 29.802 Wdry = 65.556 WH2O = 0.008 lbm/sec H2O = 0.092g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
94.111	3393.572	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
82713.867	51441.922	1.850	509.668	275.532	384.739	1.396

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	389.49	-0.13	389.49	0.33	0.60	542.52
MEAN	15.91	0.00	-0.02	389.49	-0.13	389.49	0.33	0.54	
HUB	13.07	0.00	-0.02	389.49	-0.13	389.49	0.33	0.49	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.90	47.36	8.54	575.08	694.68	10.05	570.60	515.75	0.15
MEAN	52.06	44.80	7.26	499.52	633.53	10.05	570.60	515.75	0.15
HUB	46.50	38.84	7.66	410.28	565.81	10.05	570.60	515.75	0.15

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	484.53	280.68	394.95	1181.82	0.41	2.05	1.78	7.43
MEAN	15.50	487.70	277.13	401.31	1177.82	0.41	2.13	1.86	5.75
HUB	12.59	518.71	320.26	408.03	1173.96	0.44	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	563.15	485.57	282.47	0.41	5037.83	0.92	0.91		
MEAN	486.48	452.64	209.35	0.38	4296.98	0.92	0.91	0.91	1.54
HUB	395.21	414.86	74.95	0.35	4033.85	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.51	1.15	11.16	608.18	1.04	589.33	525.51	0.10
MEAN	12.25	1.13	10.91	604.45	1.04	585.35	524.13	0.11
HUB	12.17	1.12	10.66	603.12	1.03	581.52	523.64	0.12

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	35.40	35.57	31.50	4.07	0.93	0.44	1.40
MEAN	34.63	27.55	23.50	4.05	0.93	0.42	1.64
HUB	38.13	10.41	6.50	3.91	0.93	0.40	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	541.1706	282.2110	461.7603	1174.1355	0.4609	-0.1929	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.2815	10.6370	581.7374	524.4024	0.1212	31.4317	33.0000	1.5683

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   466.7558   106.5841   454.4236  1180.1962     0.3955     0.0804     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.2577    11.0205   587.7590   524.3317   410.5396     0.0370     0.3526

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   452.4622     0.0000   452.4622  1181.2286     0.3830     0.2766     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.0919   588.8140   524.3295     0.0000     0.0600     0.0374     0.1314

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8831    12.2570     1.1291   605.2493    22.4665   249.3876     1.9332

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 139924.703       0.441     518.428  629820.250   0.130511E-03

Melt Ratio at Stator LE, Throat, TE
0.64793E-01 0.73608E-01 0.97299E-01
 trTOT =     1.3098   Tt4 =   605.2493   T1  =   462.0904

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    890815.13   3300.5173    176.0450      2.3720      0.8684      5.6411      1.3098     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 69.9%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.977   EfDer =  0.999    SH =  0.500823E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      64.431    3567.207       5.167     462.090       1.000       1.000       0.980
  W Kg/sec =  29.287  Wdry =  64.428  WH2O = 0.003  lbm/sec   H2O =   0.023g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     173.004    3779.379       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  137808.578   50554.750       1.642     831.557     506.411     619.754       1.224

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1       CU1       Cm1       Mabs     Mrel   U1cor
  TIP     20.63     0.00    -0.02   397.74    -0.14   397.74     0.39     0.73   680.38
  MEAN    17.06     0.00    -0.02   397.74    -0.14   397.74     0.39     0.64
  HUB     12.51     0.00    -0.02   397.74    -0.14   397.74     0.39     0.54

        BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
  TIP     58.23     50.47     7.76   642.21    755.51     4.67   449.37   452.55     2.81
  MEAN    53.18     47.20     5.98   531.08    663.61     4.67   449.37   452.55     2.81
  HUB     44.41     38.62     5.79   389.43    556.74     4.67   449.37   452.55     2.81

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
  TIP     20.63   628.46   362.85   513.13  1053.22      0.60     7.29     6.52    16.04
  MEAN    18.04   661.52   400.26   526.69  1047.84      0.63     7.43     6.80    12.53
  HUB     15.00   760.48   521.89   553.14  1038.44      0.73     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
  TIP    642.21   584.24   279.35     0.55  7488.48      0.92     0.91
  MEAN   561.46   550.80   161.20     0.53  7221.35      0.92     0.91     0.91     1.34
  HUB    466.95   555.87    54.94     0.54  7830.06      0.92     0.91

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
  TIP       6.70     1.30     5.28   499.59     1.08   467.82   476.95     1.47
  MEAN      6.64     1.28     5.09   498.25     1.08   463.05   476.24     1.76
  HUB       6.77     1.31     4.76   501.30     1.08   454.78   478.24     2.44

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
  TIP     35.27    28.56    24.20     4.36     0.93     0.36     1.80
  MEAN    37.23    17.02    12.70     4.32     0.92     0.31     2.22
  HUB     43.33    -5.67    -9.30     3.63     0.92     0.17     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   698.8624   399.4778   573.4337  1044.8633     0.6689    -0.0724     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.6855     4.9700   460.4312   477.1411     1.9791    34.8627    35.4000     0.5373

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   545.2269   133.3791   528.6609  1062.1549     0.5133     0.3208     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.6585     5.5752   475.8034   476.8494   554.9116     0.0263     0.4302

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   541.0205     0.0000   541.0205  1062.5455     0.5092     0.3522     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.5742   476.1725   476.8210     0.0000     0.0600     0.0382     0.3202
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8798     6.6388     1.2848   499.7089    37.6201   217.1292     1.6832

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 233920.625       0.567     851.718  710298.375   0.593300E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.965   EfDer =  1.000    SH =  0.696226E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.431    3567.207       6.639     499.708       1.000       1.000       0.980
 W Kg/sec =  29.287  Wdry =  64.427  WH2O = 0.004  lbm/sec   H2O =   0.036g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    140.031    3634.360       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 119279.008   50554.363       1.441     590.487     409.907     468.502       1.143

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   484.80    -0.17   484.80     0.45     0.75   651.74
 MEAN    18.08     0.00    -0.02   484.80    -0.17   484.80     0.45     0.70
 HUB     15.21     0.00    -0.02   484.80    -0.17   484.80     0.45     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.85     46.36     6.49   639.72   802.80     5.77   480.81   476.82     1.14
 MEAN    49.26     42.30     6.97   562.77   742.92     5.77   480.81   476.82     1.14
 HUB     44.33     37.84     6.49   473.48   677.77     5.77   480.81   476.82     1.14

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   564.34   294.30   481.52  1093.36      0.52     2.33     2.04     9.02
 MEAN    18.01   578.35   306.74   490.30  1089.32      0.53     2.40     2.13     7.35
 HUB     15.22   629.22   382.37   499.71  1085.55      0.58     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    635.67   590.25   341.37     0.54  6013.09      0.92     0.91
 MEAN   560.65   552.15   253.91     0.51  5527.34      0.92     0.91     0.91     1.46
 HUB    473.89   508.02    91.52     0.47  5823.29      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.06     1.21     6.74   529.81     1.06   504.20   492.79     0.54
 MEAN     7.94     1.20     6.57   527.38     1.06   500.48   491.61     0.60
 HUB      8.01     1.21     6.40   528.86     1.06   497.03   492.39     0.67

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.43    35.33    31.50     3.83     0.93     0.40     1.40
 MEAN    32.03    27.38    23.50     3.88     0.93     0.38     1.63
 HUB     37.42    10.38     6.50     3.88     0.93     0.39     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   642.6294   307.5981   564.2303  1083.8396     0.5929    -0.1746     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.9915     6.3179   495.4812   492.2968     0.7090    28.5976    30.6000     2.0024

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   532.8276   112.9632   520.7154  1095.1320     0.4865     0.1560     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.9712     6.7932   505.8569   492.1517   491.5697     0.0241     0.3057

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   556.5084     0.0000   556.5084  1092.8665     0.5092     0.2141     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6762	503.7846	492.1378	0.0000	0.0600	0.0380	0.0746

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8805	7.9513	1.1977	528.6808	28.9737	245.6466	1.9042

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
180220.078	0.446	656.191	637613.438	0.739079E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 7.069 EfDer = 1.000 SH = 0.806936E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.431	3567.207	7.951	528.680	1.000	1.000	0.980

W Kg/sec = 29.287 Wdry = 64.426 WH2O = 0.005 lbm/sec H2O = 0.048g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
120.258	3533.374	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
103600.094	50554.148	1.549	545.479	352.040	424.468	1.206

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	455.82	-0.16	455.82	0.41	0.70	618.83
MEAN	17.74	0.00	-0.02	455.82	-0.16	455.82	0.41	0.65	
HUB	15.05	0.00	-0.02	455.82	-0.16	455.82	0.41	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.89	46.36	7.53	624.77	773.51	7.08	511.98	492.09	0.47
MEAN	50.47	43.40	7.07	552.19	716.15	7.08	511.98	492.09	0.47
HUB	45.80	38.84	6.96	468.50	653.77	7.08	511.98	492.09	0.47

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	542.06	292.19	456.57	1125.20	0.48	2.26	1.98	8.75
MEAN	17.51	554.50	303.91	463.80	1121.57	0.49	2.34	2.07	6.78
HUB	14.85	602.49	374.97	471.59	1118.15	0.54	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	616.68	560.13	324.49	0.50	5791.50	0.92	0.91		
MEAN	544.97	522.71	241.06	0.47	5323.26	0.92	0.91	0.91	1.49
HUB	462.28	479.60	87.31	0.43	5570.66	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.49	1.19	8.12	557.66	1.05	534.04	505.53	0.26
MEAN	9.36	1.18	7.94	555.32	1.05	530.60	504.51	0.28
HUB	9.43	1.19	7.76	556.56	1.05	527.38	505.09	0.31

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.62	35.40	31.50	3.90	0.93	0.41	1.40
MEAN	33.24	27.46	23.50	3.96	0.93	0.40	1.62
HUB	38.49	10.49	6.50	3.99	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	611.6456	305.9076	529.6516	1117.1273	0.5475	-0.1612	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4141	7.6975	526.4473	505.0501	0.3205	30.0092	31.5000	1.4908

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	511.2688	111.5298	498.9557	1126.6995	0.4538	0.1578	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.3963	8.1730	535.5052	504.9527	451.3937	0.0219	0.3273

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	521.5078	0.0000	521.5078	1125.7820	0.4632	0.2381	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1063	534.6569	504.9198	0.0000	0.0600	0.0374	0.1130

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8821	9.3733	1.1788	556.5120	27.8333	235.8721	1.8285

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
173186.094	0.455	630.580	611708.063	0.869558E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.304 EfDer = 1.000 SH = 0.979396E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.431	3567.207	9.373	556.512	1.000	1.000	0.980

W Kg/sec = 29.287 Wdry = 64.425 WH2O = 0.006 lbm/sec H2O = 0.067g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
104.665	3443.889	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
91187.086	50553.805	1.675	513.330	306.411	395.845	1.292

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	426.33	-0.15	426.33	0.38	0.65	578.82
MEAN	16.97	0.00	-0.02	426.33	-0.15	426.33	0.38	0.60	
HUB	14.32	0.00	-0.02	426.33	-0.15	426.33	0.38	0.54	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.59	46.36	8.23	599.56	735.80	8.51	541.91	504.90	0.25
MEAN	51.10	43.80	7.30	528.29	678.98	8.51	541.91	504.90	0.25
HUB	46.29	37.84	8.45	445.78	616.93	8.51	541.91	504.90	0.25

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	513.83	282.57	429.16	1154.19	0.45	2.16	1.89	8.34
MEAN	16.57	523.07	289.65	435.55	1150.65	0.45	2.24	1.97	6.35
HUB	13.89	564.66	350.90	442.40	1147.27	0.49	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	587.73	526.60	305.16	0.46	5337.69	0.92	0.91		
MEAN	515.94	490.83	226.30	0.43	4803.04	0.92	0.91	0.91	1.50
HUB	432.39	449.84	81.49	0.39	4876.10	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.95	1.17	9.58	583.21	1.05	562.00	516.06	0.15
MEAN	10.79	1.15	9.38	580.54	1.04	558.55	514.99	0.17
HUB	10.81	1.15	9.18	580.90	1.04	555.28	515.16	0.18

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.36	35.42	31.50	3.92	0.93	0.42	1.40
MEAN	33.62	27.45	23.50	3.95	0.93	0.41	1.62
HUB	38.42	10.44	6.50	3.94	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	562.9362	291.2742	481.7224	1148.0660	0.4903	-0.1130	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.8342	9.2110	556.0938	515.3956	0.1801	31.1593	32.4000	1.2407

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	476.9647	106.9692	464.8149	1155.4529	0.4128	0.1768	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.8202	9.6372	563.2755	515.3317	432.2457	0.0195	0.3462

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	473.0550	0.0000	473.0550	1155.7343	0.4093	0.2598	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.6327	563.5751	515.2883	0.0000	0.0600	0.0371	0.1737

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8822	10.7943	1.1516	581.5494	25.0397	239.4826	1.8565

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
155870.922	0.451	567.534	606952.313	0.107882E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.11460E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.462 EfDer = 0.999 SH = 0.123533E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.431	3567.207	10.794	581.549	1.000	1.000	0.980

W Kg/sec = 29.287 Wdry = 64.423 WH2O = 0.008 lbm/sec H2O = 0.094g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
92.908	3368.938	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
81440.305	50553.297	1.874	509.668	272.012	384.739	1.414

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	383.50	-0.13	383.50	0.33	0.59	538.58
MEAN	15.91	0.00	-0.02	383.50	-0.13	383.50	0.33	0.54	
HUB	13.07	0.00	-0.02	383.50	-0.13	383.50	0.33	0.48	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	56.09	47.36	8.73	570.30	687.36	10.02	569.74	515.29	0.16
MEAN	52.26	44.80	7.46	495.37	626.57	10.02	569.74	515.29	0.16
HUB	46.70	38.84	7.86	406.87	559.21	10.02	569.74	515.29	0.16

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	479.57	280.17	389.22	1180.71	0.41	2.05	1.78	7.43
MEAN	15.50	482.35	276.21	395.43	1176.74	0.41	2.13	1.86	5.75
HUB	12.59	512.64	318.13	401.99	1172.91	0.44	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	558.47	478.48	278.30	0.41	5028.63	0.92	0.91		
MEAN	482.44	445.98	206.22	0.38	4282.73	0.92	0.91	0.91	1.55
HUB	391.92	408.71	73.80	0.35	4006.93	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.42	1.15	11.11	606.69	1.04	588.22	524.99	0.11
MEAN	12.17	1.13	10.86	602.96	1.04	584.28	523.61	0.12
HUB	12.08	1.12	10.61	601.58	1.03	580.48	523.10	0.13

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	35.75	35.57	31.50	4.07	0.93	0.45	1.40
MEAN	34.93	27.54	23.50	4.04	0.93	0.42	1.64
HUB	38.36	10.40	6.50	3.90	0.93	0.41	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	534.6923	281.2770	454.7297	1173.1816	0.4558	-0.1909	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.1977	10.5976	580.7891	523.8748	0.1266	31.7392	33.0000	1.2608

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   459.6380   104.9587   447.4938  1179.2167     0.3898     0.0883     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.1755    10.9795   586.7806   523.8063   410.5396     0.0363     0.3568

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   445.6555     0.0000   445.6555  1180.2114     0.3776     0.2813     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.0477   587.7970   523.8033     0.0000     0.0600     0.0371     0.1382

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8835    12.1743     1.1278   603.7416    22.1959   247.6451     1.9197

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 138238.250       0.443     503.333  618927.188   0.133362E-03

Melt Ratio at Stator LE, Throat, TE
0.65233E-01 0.74029E-01 0.97620E-01
 trTOT =     1.3065   Tt4 =   603.7416   T1  =   462.0903

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    881435.94   3209.3562    173.0041      2.3560      0.8700      5.9767      1.3065     37.3740
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25µm, ISA +36R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.969   EfDer =  0.985    SH =  0.114976E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     73.930    3973.502       5.167     482.271       1.000       1.000       0.980
  W Kg/sec =  33.604  Wdry =  73.921  WH2O = 0.009  lbm/sec   H2O =   0.048g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    202.801    4120.825       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 171010.438   58006.203       1.401     831.557     593.652     619.754       1.044

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   493.56    -0.17   493.56     0.47     0.83   741.85
 MEAN    17.06     0.00    -0.02   493.56    -0.17   493.56     0.47     0.74
 HUB     12.51     0.00    -0.02   493.56    -0.17   493.56     0.47     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.40     50.47     4.93   715.35   869.24     4.45   462.68   465.30     3.25
 MEAN    50.17     47.20     2.97   591.57   770.56     4.45   462.68   465.30     3.25
 HUB     41.32     38.62     2.70   433.79   657.21     4.45   462.68   465.30     3.25

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   741.37   362.70   646.58  1066.64      0.70     7.29     6.52    16.04
 MEAN    18.04   787.07   421.49   664.70  1061.12      0.74     7.43     6.80    12.53
 HUB     15.00   928.87   591.96   715.81  1047.12      0.89     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    715.35   736.50   352.65     0.69  7486.10      0.92     0.90
 MEAN   625.41   695.28   203.92     0.66  7604.87      0.92     0.90     0.90     1.21
 HUB    520.13   719.40    71.83     0.69  8881.49      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.78     1.31     4.93   524.02     1.09   479.82   488.58     1.80
 MEAN     6.81     1.32     4.75   524.68     1.09   474.87   489.10     2.15
 HUB      7.12     1.38     4.29   531.80     1.10   462.42   493.50     3.40

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.29    28.61    24.20     4.41     0.93     0.27     1.80
 MEAN    32.38    17.05    12.70     4.35     0.91     0.22     2.22
 HUB     39.59    -5.73    -9.30     3.57     0.91     0.07     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.985       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   849.9094   420.6696   738.5005  1054.2638     0.8062    -0.1057     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.8831     4.5082   468.7473   490.4814     2.7130    29.6670    35.4000     5.7330

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   691.5118   169.1649   670.5012  1076.1078     0.6426     0.2318     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.8130     5.1774   488.3825   489.5546   554.9116     0.0412     0.3616

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   692.9905     0.0000   692.9905  1075.9021     0.6441     0.2576     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.1200	488.2229	489.4227	0.0000	0.0600	0.0711	0.2063

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8263	6.7456	1.3055	526.8323	44.5619	237.2687	1.8393

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
277116.969	0.542	1157.747	817600.875	0.128803E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.618 EfDer = 0.990 SH = 0.143046E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.930	3973.502	6.746	526.832	1.000	1.000	0.980

W Kg/sec = 33.604 Wdry = 73.919 WH2O = 0.011 lbm/sec H2O = 0.068g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
162.364	3942.716	1.381	0.248	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
149419.844	58005.563	1.242	590.487	475.303	468.502	0.986

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	607.31	-0.21	607.31	0.56	0.86	707.04
MEAN	18.08	0.00	-0.02	607.31	-0.21	607.31	0.56	0.80	
HUB	15.21	0.00	-0.02	607.31	-0.21	607.31	0.56	0.74	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.57	46.36	3.21	712.58	936.42	5.47	497.18	489.28	1.14
MEAN	45.92	42.30	3.62	626.87	872.95	5.47	497.18	489.28	1.14
HUB	40.98	37.84	3.14	527.41	804.49	5.47	497.18	489.28	1.14

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	660.13	282.82	596.47	1114.63	0.59	2.33	2.04	9.02
MEAN	18.01	680.22	308.30	606.34	1111.00	0.61	2.40	2.13	7.35
HUB	15.22	742.59	412.91	617.20	1107.74	0.67	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	708.07	732.54	425.25	0.66	5779.52	0.92	0.91		
MEAN	624.50	683.83	316.20	0.62	5556.27	0.92	0.91	0.91	1.37
HUB	527.86	627.82	114.96	0.57	6288.86	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.20	1.22	6.49	559.05	1.06	524.02	503.64	0.51
MEAN	8.14	1.21	6.34	557.81	1.06	520.61	503.15	0.56
HUB	8.34	1.24	6.19	561.89	1.07	517.56	504.97	0.61

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.37	35.49	31.50	3.99	0.93	0.33	1.40
MEAN	26.95	27.54	23.50	4.04	0.92	0.32	1.63
HUB	33.78	10.55	6.50	4.05	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.990	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	778.8822	309.1667	714.8940	1100.4677	0.7078	-0.2337	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2084	5.8989	510.8253	504.0860	0.7459	23.3868	30.6000	7.2132

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	672.3079	142.5341	657.0251	1113.7885	0.6036	0.0268	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.1502	6.3903	523.2526	503.7094	491.5697	0.0408	0.2245

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	714.9500	0.0000	714.9500	1108.6941	0.6449	0.1032	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.1372	518.5026	503.6655	0.0000	0.0600	0.0724	-0.1073

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8276	8.0907	1.1994	559.5821	32.7515	279.2954	2.1651

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
203777.172	0.406	851.346	740021.500	0.148649E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.993 EfDer = 0.992 SH = 0.157590E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.930	3973.502	8.091	559.582	1.000	1.000	0.980

W Kg/sec = 33.604 Wdry = 73.918 WH2O = 0.012 lbm/sec H2O = 0.087g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
139.516	3825.601	1.381	0.249	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
128622.125	58005.234	1.336	545.479	408.441	424.468	1.039

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	565.91	-0.19	565.91	0.50	0.80	670.01
MEAN	17.74	0.00	-0.02	565.91	-0.19	565.91	0.50	0.74	
HUB	15.05	0.00	-0.02	565.91	-0.19	565.91	0.50	0.68	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.89	46.36	4.53	695.93	897.14	6.82	533.85	503.46	0.41
MEAN	47.39	43.40	3.99	615.09	835.96	6.82	533.85	503.46	0.41
HUB	42.69	38.84	3.85	521.86	769.94	6.82	533.85	503.46	0.41

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	630.01	285.92	561.39	1151.43	0.55	2.26	1.98	8.75
MEAN	17.51	648.14	309.11	569.68	1148.06	0.56	2.34	2.07	6.78
HUB	14.85	707.10	406.18	578.81	1144.99	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	686.92	689.90	401.00	0.60	5667.99	0.92	0.91		
MEAN	607.05	642.88	297.93	0.56	5414.96	0.92	0.91	0.91	1.40
HUB	514.93	588.93	108.75	0.51	6034.66	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.70	1.20	7.93	591.17	1.06	559.27	515.92	0.22
MEAN	9.62	1.19	7.77	589.76	1.05	556.00	515.42	0.24
HUB	9.81	1.21	7.61	593.21	1.06	553.03	516.77	0.25

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.99	35.54	31.50	4.04	0.93	0.34	1.40
MEAN	28.48	27.61	23.50	4.11	0.92	0.34	1.62
HUB	35.06	10.64	6.50	4.14	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	730.3590	311.1412	660.7689	1140.2560	0.6405	-0.2029	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.6901	7.3770	548.5259	516.0888	0.2850	25.2147	31.5000	6.2853

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	637.3753	139.0391	622.0253	1150.8380	0.5538	0.0409	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.6431	7.8492	558.7398	515.8715	451.3937	0.0342	0.2572

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	654.4291	0.0000	654.4291	1148.9849	0.5696	0.1491	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.7219	556.9743	515.7950	0.0000	0.0600	0.0583	-0.0247

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8482	9.5963	1.1861	591.3758	31.7958	264.8535	2.0531

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
197926.875	0.419	826.905	699976.250	0.165407E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 4.577 EfDer = 0.995 SH = 0.179594E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.930	3973.502	9.596	591.375	1.000	1.000	0.980

W Kg/sec = 33.604 Wdry = 73.916 WH2O = 0.013 lbm/sec H2O = 0.114g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
120.921	3721.344	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
111872.602	58004.734	1.450	513.330	354.033	395.845	1.118

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	523.04	-0.18	523.04	0.45	0.73	625.45
MEAN	16.97	0.00	-0.02	523.04	-0.18	523.04	0.45	0.68	
HUB	14.32	0.00	-0.02	523.04	-0.18	523.04	0.45	0.62	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.94	46.36	5.58	667.85	848.43	8.37	569.41	515.71	0.19
MEAN	48.38	43.80	4.58	588.47	787.45	8.37	569.41	515.71	0.19
HUB	43.52	37.84	5.68	496.55	721.33	8.37	569.41	515.71	0.19

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	593.18	281.97	521.88	1185.30	0.50	2.16	1.89	8.34
MEAN	16.57	607.72	298.11	529.58	1181.76	0.51	2.24	1.97	6.35
HUB	13.89	659.39	381.34	537.93	1178.47	0.56	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	654.67	641.30	372.70	0.54	5327.01	0.92	0.91		
MEAN	574.70	597.46	276.60	0.51	4943.89	0.92	0.91	0.91	1.43
HUB	481.64	547.20	100.30	0.46	5299.44	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.28	1.18	9.53	621.04	1.05	592.79	526.39	0.12
MEAN	11.16	1.16	9.34	618.91	1.05	589.25	525.66	0.13
HUB	11.28	1.17	9.14	620.89	1.05	585.97	526.38	0.13

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	28.38	35.53	31.50	4.03	0.93	0.36	1.40
MEAN	29.38	27.58	23.50	4.08	0.92	0.36	1.62
HUB	35.33	10.56	6.50	4.06	0.92	0.38	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	661.9050	299.7860	590.1241	1177.5358	0.5621	-0.1356	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
11.2195	9.0781	585.1064	526.1412	0.1381	26.9308	32.4000	5.4692

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   584.9426   131.1855   570.0422  1185.2654     0.4935     0.0811     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    11.1851    9.4900   592.8094   526.0141   432.2457     0.0281     0.2866

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   580.2761     0.0000   580.2761  1185.6703     0.4894     0.1902     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.4854   593.2487   525.9433     0.0000     0.0600     0.0467     0.0787

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8637    11.1497     1.1619   620.2776    28.9048   265.1896     2.0557

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 180042.766       0.420     752.188  685883.063   0.189766E-03

Melt Ratio at Stator LE, Throat, TE
0.22326E-01 0.30146E-01 0.49383E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.165   EfDer =  0.998    SH =  0.203628E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     73.930    3973.502      11.150     620.277       1.000       1.000       0.980
 W Kg/sec =  33.604  Wdry =  73.915  WH2O = 0.015  lbm/sec   H2O =   0.147g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    106.588    3633.612       1.380       0.249      53.355      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  98474.133   58004.184       1.633     509.668     312.097     384.739       1.233

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   463.71    -0.16   463.71     0.39     0.66   580.90
 MEAN    15.91     0.00    -0.02   463.71    -0.16   463.71     0.39     0.60
 HUB     13.07     0.00    -0.02   463.71    -0.16   463.71     0.39     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.88    47.36     6.52   635.25   786.62    10.06   603.02   525.90     0.10
 MEAN    49.97    44.80     5.17   551.79   720.88    10.06   603.02   525.90     0.10
 HUB     44.35    38.84     5.51   453.21   648.51    10.06   603.02   525.90     0.10

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   547.90   287.18   466.60  1216.81      0.45     2.05     1.78     7.43
 MEAN    15.50   555.58   288.83   474.60  1212.48      0.46     2.13     1.86     5.75
 HUB     12.59   594.80   347.06   483.05  1208.35      0.49     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    622.08   574.34   334.89     0.47  5154.96      0.92     0.91
 MEAN   537.38   535.75   248.56     0.44  4478.71      0.92     0.91     0.91     1.47
 HUB    436.56   491.27    89.50     0.41  4371.60      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.96     1.16    11.29   648.96     1.05   624.87   535.53     0.07
 MEAN    12.71     1.14    11.02   645.20     1.04   620.43   534.31     0.08
 HUB     12.67     1.14    10.76   644.61     1.04   616.21   534.14     0.08

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.61    35.67    31.50     4.17     0.93     0.40     1.40
 MEAN    31.32    27.64    23.50     4.14     0.92     0.38     1.64
 HUB     35.70    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   623.7801   294.1259   550.0832  1207.1307     0.5167    -0.2160     2.0437
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    Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
   12.7416    10.6454   615.0401   534.6289     0.0843    28.1331    33.0000     4.8669

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   557.3695   127.2758   542.6432  1213.2960     0.4594    -0.0133     2.1315

   BlockageTh  PtTh       PsTh       TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.6900    11.0014   621.3315   534.4940   410.5396     0.0494     0.3069

    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   538.7160     0.0000   538.7160  1214.8634     0.4434     0.2239     0.5109

   Blockage4   Ps4       Ts4        TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.1147   622.9728   534.5038     0.0000     0.0600     0.0446     0.0513

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
    0.8708    12.6984     1.1389   646.2527    25.9803   269.3834     2.0882

Del Enthalpy   Del_H/U^2    GHP       Reynolds#        SH
 161940.484       0.418     676.560  690968.938   0.211928E-03

Melt Ratio at Stator LE, Throat, TE
0.12172E+00 0.13243E+00 0.16199E+00
 trTOT =     1.3400   Tt4 =   646.2527   T1  =   482.2715

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
   1020804.25   4264.7456    202.8008      2.4575      0.8275      2.9688      1.3400     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 75.6%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.316   EfDer =  0.998    SH =  0.120376E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      65.262    3705.060       5.167     482.271       1.000       1.000       0.980
  W Kg/sec =  29.664  Wdry =  65.254  WH2O = 0.008  lbm/sec   H2O =   0.052g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     179.024    3842.429       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 146607.906   51205.289       1.587     831.557     524.054     619.754       1.183

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1       CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   423.13    -0.15   423.13      0.40     0.75   691.73
 MEAN    17.06     0.00    -0.02   423.13    -0.15   423.13      0.40     0.66
 HUB     12.51     0.00    -0.02   423.13    -0.15   423.13      0.40     0.56

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.62    50.47     7.15   667.02   790.04      4.63   467.87   465.21     2.80
 MEAN    52.52    47.20     5.32   551.60   695.32      4.63   467.87   465.21     2.80
 HUB     43.72    38.62     5.10   404.48   585.46      4.63   467.87   465.21     2.80

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   659.76   369.15   546.82  1074.45      0.61     7.29     6.52    16.04
 MEAN    18.04   695.89   411.17   561.43  1068.94      0.65     7.43     6.80    12.53
 HUB     15.00   803.52   543.76   591.58  1058.77      0.76     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    667.02   622.69   297.87     0.58  7618.59      0.92     0.91
 MEAN   583.15   587.18   171.98     0.55  7418.41      0.92     0.91     0.91     1.31
 HUB    484.99   594.49    58.77     0.56  8158.30      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.22   521.88     1.08   486.88   487.37     1.51
 MEAN     6.67     1.29     5.03   520.84     1.08   481.90   486.98     1.79
 HUB      6.84     1.32     4.69   524.69     1.09   472.78   489.34     2.48

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.02    28.58    24.20     4.38     0.93     0.34     1.80
 MEAN    36.22    17.03    12.70     4.33     0.92     0.29     2.22
 HUB     42.59    -5.67    -9.30     3.63     0.92     0.15     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   737.5757   410.3744   612.8709  1065.4132     0.6923    -0.0774     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7227     4.8976   478.7310   487.9099     2.0269    33.8060    35.4000     1.5940

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   581.2339   142.1875   563.5739  1083.6951     0.5363     0.3034     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6914     5.5147   495.3102   487.3918   554.9116     0.0278     0.4164

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   577.1659     0.0000   577.1659  1084.0847     0.5324     0.3354     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5097   495.6920   487.3470     0.0000     0.0600     0.0417     0.3006
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8741     6.6669     1.2903   522.4712    40.2020   221.2746     1.7153

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 250031.047       0.562     922.117  700932.563   0.138611E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.292   EfDer =  1.000    SH =  0.158126E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     65.262    3705.060       6.667     522.471       1.000       1.000       0.980
 W Kg/sec =  29.664  Wdry =  65.252  WH2O = 0.010  lbm/sec   H2O =   0.078g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    144.419    3691.664       1.381       0.249      53.353      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 126862.750   51204.535       1.397     590.487     422.776     468.502       1.108

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   515.63    -0.18   515.63     0.47     0.77   662.02
 MEAN    18.08     0.00    -0.02   515.63    -0.18   515.63     0.47     0.72
 HUB     15.21     0.00    -0.02   515.63    -0.18   515.63     0.47     0.65

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.19     46.36     5.83   664.44   841.18     5.73   501.10   487.32     1.13
 MEAN    48.59     42.30     6.29   584.52   779.58     5.73   501.10   487.32     1.13
 HUB     43.65     37.84     5.81   491.78   712.67     5.73   501.10   487.32     1.13

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   591.28   297.67   510.88  1116.70      0.53     2.33     2.04     9.02
 MEAN    18.01   606.84   312.60   520.13  1112.63      0.55     2.40     2.13     7.35
 HUB     15.22   660.92   394.80   530.05  1108.85      0.60     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    660.23   626.46   362.56     0.56  6082.10      0.92     0.91
 MEAN   582.31   585.90   269.71     0.53  5633.10      0.92     0.91     0.91     1.44
 HUB    492.20   538.92    97.40     0.49  6012.79      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.10     1.22     6.71   554.08     1.06   525.98   501.82     0.55
 MEAN     7.99     1.20     6.54   551.75     1.06   522.15   500.85     0.61
 HUB      8.09     1.21     6.38   553.72     1.06   518.61   501.79     0.67

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     30.23    35.36    31.50     3.86     0.93     0.38     1.40
 MEAN    31.01    27.41    23.50     3.91     0.93     0.37     1.63
 HUB     36.68    10.41     6.50     3.91     0.93     0.38     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   677.4536   313.4760   600.5632  1106.3429     0.6123    -0.1836     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.0453     6.2652   516.3025   501.5639     0.7211    27.5632    30.6000     3.0368

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   566.6553   120.1349   553.7741  1118.1534     0.5068     0.1330     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.0209     6.7457   527.3795   501.3245   491.5697     0.0261     0.2909

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   592.7982     0.0000   592.7982  1115.5443     0.5314     0.1967     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6153	524.9463	501.3198	0.0000	0.0600	0.0406	0.0470

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8767	7.9990	1.1998	553.1844	30.7150	251.7875	1.9518

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
191120.688	0.438	704.855	630043.000	0.165919E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.487 EfDer = 1.000 SH = 0.178012E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.262	3705.060	7.999	553.184	1.000	1.000	0.980

W Kg/sec = 29.664 Wdry = 65.250 WH2O = 0.012 lbm/sec H2O = 0.102g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
123.857	3587.719	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
109851.781	51204.137	1.504	545.479	362.604	424.468	1.171

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	483.33	-0.17	483.33	0.43	0.72	628.35
MEAN	17.74	0.00	-0.02	483.33	-0.17	483.33	0.43	0.67	
HUB	15.05	0.00	-0.02	483.33	-0.17	483.33	0.43	0.61	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.33	46.36	6.97	648.92	809.27	7.06	534.41	501.22	0.47
MEAN	49.89	43.40	6.49	573.53	750.16	7.06	534.41	501.22	0.47
HUB	45.20	38.84	6.36	486.61	685.97	7.06	534.41	501.22	0.47

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	567.00	296.89	483.05	1150.03	0.49	2.26	1.98	8.75
MEAN	17.51	580.80	310.72	490.69	1146.35	0.51	2.34	2.07	6.78
HUB	14.85	631.75	387.53	498.93	1142.90	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	640.51	592.80	343.62	0.52	5884.78	0.92	0.91		
MEAN	566.03	553.14	255.32	0.48	5442.51	0.92	0.91	0.91	1.47
HUB	480.14	507.45	92.61	0.44	5757.33	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.57	1.20	8.12	583.76	1.06	557.93	513.69	0.26
MEAN	9.44	1.18	7.94	581.46	1.05	554.36	512.82	0.29
HUB	9.53	1.19	7.76	583.10	1.05	551.03	513.51	0.31

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.58	35.43	31.50	3.93	0.93	0.40	1.40
MEAN	32.34	27.49	23.50	3.99	0.93	0.39	1.62
HUB	37.84	10.52	6.50	4.02	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	642.8152	312.7542	561.6015	1141.3477	0.5632	-0.1676	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4957	7.6768	549.5794	513.3654	0.3262	29.1133	31.5000	2.3867

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	541.8835	118.2082	528.8333	1151.2821	0.4707	0.1378	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4749	8.1566	559.1836	513.2144	451.3937	0.0233	0.3147

```
    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   553.0262     0.0000   553.0262  1150.2433     0.4808     0.2241     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.0844   558.2064   513.1807     0.0000     0.0600     0.0386     0.0918

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8800     9.4509     1.1815   582.7703    29.5879   240.8769     1.8673

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 184193.906       0.449     679.309  602994.688   0.188743E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 6.811   EfDer =  1.000    SH =  0.207102E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     65.262    3705.060       9.451     582.770       1.000       1.000       0.980
 W Kg/sec =  29.664  Wdry =  65.248  WH2O = 0.014  lbm/sec   H2O =   0.135g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    107.596    3495.462       1.381       0.249      53.355      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  96390.492   51203.551       1.629     513.330     315.023     395.845       1.257

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   450.66    -0.16   450.66      0.39     0.66   587.48
 MEAN    16.97     0.00    -0.02   450.66    -0.16   450.66      0.39     0.61
 HUB     14.32     0.00    -0.02   450.66    -0.16   450.66      0.39     0.56

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     54.11    46.36     7.75   622.73   768.82      8.53   566.46   513.14     0.24
 MEAN    50.61    43.80     6.81   548.71   710.17      8.53   566.46   513.14     0.24
 HUB     45.78    37.84     7.94   463.00   646.23      8.53   566.46   513.14     0.24

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     18.88   536.74   288.26   452.76  1180.42      0.45     2.16     1.89     8.34
 MEAN    16.57   547.11   296.89   459.55  1176.79      0.46     2.24     1.97     6.35
 HUB     13.89   591.30   362.91   466.83  1173.34      0.50     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    610.44   555.69   322.18     0.47  5445.33      0.92     0.91
 MEAN   535.88   517.98   238.99     0.44  4923.26      0.92     0.91     0.91     1.49
 HUB    449.10   474.72    86.19     0.40  5043.10      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     11.06     1.17     9.62   611.05     1.05   587.91   523.67     0.16
 MEAN    10.90     1.15     9.42   608.33     1.04   584.30   522.71     0.17
 HUB     10.94     1.16     9.22   608.96     1.04   580.88   522.97     0.18

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.48    35.44    31.50     3.94     0.93     0.41     1.40
 MEAN    32.86    27.48    23.50     3.98     0.93     0.40     1.62
 HUB     37.86    10.46     6.50     3.96     0.93     0.41     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m        C3         Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   589.9496   298.5599   508.8246  1173.9149     0.5025    -0.1165     2.1803

    Pt3        Ps3        Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.9517     9.2371   581.5042   523.1137     0.1789    30.4029    32.4000     1.9971

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   503.7490   112.9762   490.9170  1181.5269     0.4264     0.1606     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.9356     9.6664   589.0724   523.0191   432.2457     0.0204     0.3356

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   499.6151     0.0000   499.6151  1181.8290     0.4227     0.2480     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6623   589.4069   522.9662     0.0000     0.0600     0.0380     0.1580

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8809    10.9084     1.1542   609.4429    26.6757   243.7628     1.8896

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 166161.391       0.446     612.805  597037.063   0.218711E-03

Melt Ratio at Stator LE, Throat, TE
0.38448E-01 0.47042E-01 0.67898E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.057   EfDer =  1.000    SH =  0.233673E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     65.262    3705.060      10.908     609.442       1.000       1.000       0.980
 W Kg/sec =  29.664  Wdry =  65.247  WH2O = 0.015  lbm/sec   H2O =   0.171g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     95.329    3418.116       1.380       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  85828.719   51203.020       1.826     509.668     279.132     384.739       1.378

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   404.16    -0.14   404.16     0.34     0.60   546.45
 MEAN   15.91     0.00    -0.02   404.16    -0.14   404.16     0.34     0.55
 HUB    13.07     0.00    -0.02   404.16    -0.14   404.16     0.34     0.49

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    55.70    47.36     8.34   592.34   717.20    10.08   596.33   522.94     0.14
 MEAN   51.86    44.80     7.06   514.51   654.38    10.08   596.33   522.94     0.14
 HUB    46.29    38.84     7.45   422.59   584.85    10.08   596.33   522.94     0.14

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   500.08   287.10   409.46  1208.27     0.41     2.05     1.78     7.43
 MEAN   15.50   503.74   283.91   416.12  1204.15     0.42     2.13     1.86     5.75
 HUB    12.59   536.16   329.28   423.14  1200.18     0.45     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   580.05   503.47   292.95     0.42  5153.07     0.92     0.91
 MEAN  501.08   469.38   217.17     0.39  4402.17     0.92     0.91     0.91     1.53
 HUB   407.07   430.23    77.79     0.36  4147.41     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    12.58     1.15    11.20   636.18     1.04   616.11   532.24     0.10
 MEAN   12.33     1.13    10.95   632.29     1.04   611.92   530.93     0.11
 HUB    12.24     1.12    10.69   630.96     1.04   607.89   530.50     0.12

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    35.04    35.58    31.50     4.08     0.93     0.44     1.40
 MEAN   34.31    27.56    23.50     4.06     0.93     0.41     1.64
 HUB    37.89    10.42     6.50     3.92     0.93     0.40     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   559.5643   289.1178   479.0857  1200.2535     0.4662    -0.1949     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.3558    10.6670   608.0218   531.1992     0.1151    31.1101    33.0000     1.8899
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   484.3023   110.5908   471.5065  1206.4578     0.4014     0.0719     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.3303    11.0509   614.3241   531.1083   410.5396     0.0378     0.3481

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   469.3644     0.0000   469.3644  1207.5466     0.3887     0.2717     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.1258   615.4670   531.1039     0.0000     0.0600     0.0378     0.1240

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8826    12.3302     1.1303   633.1395    23.7019   251.2256     1.9475

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 147729.500       0.439     544.828  607569.188   0.242960E-03

Melt Ratio at Stator LE, Throat, TE
0.14124E+00 0.15256E+00 0.18273E+00
 trTOT =     1.3128   Tt4 =   633.1395   T1  =   482.2706

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    939236.50   3463.9131    179.0239      2.3862      0.8663      5.3155      1.3128     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 72.7%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.657   EfDer =  0.999    SH =  0.121111E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      64.147    3675.210       5.167     482.270       1.000       1.000       0.980
  W Kg/sec =  29.158  Wdry =  64.139  WH2O = 0.008  lbm/sec   H2O =   0.052g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     175.965    3811.473       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 143637.328   50330.277       1.614     831.557     515.100     619.754       1.203

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   414.56    -0.14   414.56     0.39     0.74   686.16
 MEAN    17.06     0.00    -0.02   414.56    -0.14   414.56     0.39     0.65
 HUB     12.51     0.00    -0.02   414.56    -0.14   414.56     0.39     0.55

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.94    50.47     7.47   661.65   780.92      4.65   468.45   465.20     2.75
 MEAN    52.86    47.20     5.66   547.16   686.58      4.65   468.45   465.20     2.75
 HUB     44.07    38.62     5.45   401.22   577.02      4.65   468.45   465.20     2.75

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   650.72   370.21   535.15  1075.27      0.61     7.29     6.52    16.04
 MEAN    18.04   685.65   410.22   549.39  1069.76      0.64     7.43     6.80    12.53
 HUB     15.00   789.89   538.48   577.91  1059.88      0.75     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    661.65   609.36   291.44     0.57  7640.32      0.92     0.91
 MEAN   578.46   574.57   168.24     0.54  7401.19      0.92     0.91     0.91     1.33
 HUB    481.08   580.75    57.39     0.55  8078.91      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.25   521.68     1.08   487.63   487.26     1.49
 MEAN     6.65     1.29     5.06   520.44     1.08   482.64   486.76     1.76
 HUB      6.80     1.32     4.73   523.94     1.09   473.77   488.91     2.41

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.67    28.57    24.20     4.37     0.93     0.35     1.80
 MEAN    36.75    17.03    12.70     4.33     0.92     0.30     2.22
 HUB     42.98    -5.67    -9.30     3.63     0.92     0.16     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   725.4619   409.4241   598.8881  1066.4929     0.6802    -0.0747     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7052     4.9363   479.7035   487.6528     1.9765    34.3581    35.4000     1.0419

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   568.6710   139.1143   551.3927  1084.4683     0.5244     0.3126     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6762     5.5481   496.0190   487.1621   554.9116     0.0269     0.4237

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   564.4603     0.0000   564.4603  1084.8628     0.5203     0.3444     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5455   496.4052   487.1236     0.0000     0.0600     0.0397     0.3111
```

```
    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8773     6.6544     1.2878   522.0181    39.7491   219.1088     1.6985

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 247217.250       0.565     896.160  686730.188   0.139987E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.648   EfDer =  1.000    SH =  0.160264E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.147    3675.210       6.654     522.018       1.000       1.000       0.980
 W Kg/sec =  29.158  Wdry =  64.136  WH2O = 0.010  lbm/sec   H2O =   0.080g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    142.158    3663.511       1.381       0.249      53.353      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 124270.961   50329.504       1.419     590.487     416.157     468.502       1.126

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   505.09    -0.17   505.09     0.46     0.76   656.97
 MEAN    18.08     0.00    -0.02   505.09    -0.17   505.09     0.46     0.71
 HUB     15.21     0.00    -0.02   505.09    -0.17   505.09     0.46     0.64

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.54    46.36     6.18   659.08   830.51     5.75   501.51   487.11     1.14
 MEAN    48.95    42.30     6.65   579.81   769.09     5.75   501.51   487.11     1.14
 HUB     44.01    37.84     6.17   487.82   702.32     5.75   501.51   487.11     1.14

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   583.72   299.56   500.99  1116.92     0.52     2.33     2.04     9.02
 MEAN    18.01   598.63   313.28   510.12  1112.80     0.54     2.40     2.13     7.35
 HUB     15.22   651.64   392.86   519.90  1108.98     0.59     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    654.92   614.22   355.35     0.55  6120.68     0.92     0.91
 MEAN   577.62   574.54   264.34     0.52  5645.27     0.92     0.91     0.91     1.45
 HUB    488.24   528.57    95.37     0.48  5983.21     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.09     1.22     6.73   553.57     1.06   526.19   501.62     0.55
 MEAN     7.97     1.20     6.56   551.12     1.06   522.32   500.59     0.61
 HUB      8.05     1.21     6.39   552.87     1.06   518.73   501.43     0.68

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     30.88    35.35    31.50     3.85     0.93     0.39     1.40
 MEAN    31.56    27.39    23.50     3.89     0.93     0.38     1.63
 HUB     37.08    10.40     6.50     3.90     0.93     0.39     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   666.6125   314.1573   587.9434  1106.8849     0.6022    -0.1787     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.0218     6.2965   516.8093   501.2869     0.7218    28.1170    30.6000     2.4830

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   554.9428   117.6518   542.3279  1118.5668     0.4961     0.1455     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     7.9997     6.7754   527.7711   501.0569   491.5697     0.0250     0.2990

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   579.9785     0.0000   579.9785  1116.1204     0.5196     0.2066     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6529	525.4903	501.0533	0.0000	0.0600	0.0387	0.0625

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8792	7.9794	1.1991	552.5200	30.5035	248.4767	1.9262

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
189806.906	0.443	688.048	616939.813	0.168387E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.805 EfDer = 1.000 SH = 0.180922E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.147	3675.210	7.979	552.520	1.000	1.000	0.980

W Kg/sec = 29.158 Wdry = 64.135 WH2O = 0.012 lbm/sec H2O = 0.104g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
121.965	3560.954	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
107742.344	50329.098	1.528	545.479	357.066	424.468	1.189

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	474.04	-0.16	474.04	0.42	0.71	623.66
MEAN	17.74	0.00	-0.02	474.04	-0.16	474.04	0.42	0.66	
HUB	15.05	0.00	-0.02	474.04	-0.16	474.04	0.42	0.60	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.64	46.36	7.28	643.69	799.54	7.07	534.46	500.97	0.48
MEAN	50.21	43.40	6.81	568.91	740.65	7.07	534.46	500.97	0.48
HUB	45.53	38.84	6.69	482.69	676.66	7.07	534.46	500.97	0.48

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	560.18	298.17	474.24	1149.86	0.49	2.26	1.98	8.75
MEAN	17.51	573.40	310.95	481.77	1146.15	0.50	2.34	2.07	6.78
HUB	14.85	623.36	385.48	489.88	1142.68	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	635.35	581.88	337.18	0.51	5910.06	0.92	0.91		
MEAN	561.47	543.01	250.52	0.47	5446.59	0.92	0.91	0.91	1.48
HUB	476.27	498.22	90.79	0.44	5726.89	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.54	1.20	8.13	582.98	1.06	557.76	513.42	0.27
MEAN	9.41	1.18	7.95	580.59	1.05	554.17	512.51	0.30
HUB	9.49	1.19	7.77	582.03	1.05	550.81	513.13	0.32

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.16	35.41	31.50	3.91	0.93	0.40	1.40
MEAN	32.84	27.47	23.50	3.97	0.93	0.40	1.62
HUB	38.20	10.50	6.50	4.00	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	633.4512	312.9921	550.7236	1141.4048	0.5550	-0.1640	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4619	7.6955	549.6346	513.0459	0.3320	29.6108	31.5000	1.8892

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	531.4478	115.9317	518.6488	1151.2759	0.4616	0.1491	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4427	8.1746	559.1786	512.8990	451.3937	0.0225	0.3218

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   542.2184     0.0000   542.2184  1150.2898     0.4714     0.2320     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.1053   558.2524   512.8662     0.0000     0.0600     0.0378     0.1038

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8813     9.4193     1.1804   581.8654    29.3474   238.0829     1.8456

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 182697.922       0.453     662.278  591207.375   0.192073E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 7.090   EfDer =  1.000    SH =  0.210894E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     64.147    3675.210       9.419     581.865       1.000       1.000       0.980
 W Kg/sec =  29.158  Wdry =  64.133  WH2O = 0.014  lbm/sec   H2O =   0.138g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    106.030    3469.997       1.381       0.249      53.355      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  94671.078   50328.504       1.654     513.330     310.438     395.845       1.275

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   442.62    -0.15   442.62     0.38     0.66   583.20
 MEAN    16.97     0.00    -0.02   442.62    -0.15   442.62     0.38     0.61
 HUB     14.32     0.00    -0.02   442.62    -0.15   442.62     0.38     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     54.38    46.36     8.02   617.71   760.04     8.53   566.13   512.83     0.25
 MEAN    50.89    43.80     7.09   544.29   701.66     8.53   566.13   512.83     0.25
 HUB     46.07    37.84     8.23   459.27   637.95     8.53   566.13   512.83     0.25

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   530.64   288.94   445.08  1179.87     0.45     2.16     1.89     8.34
 MEAN    16.57   540.49   296.74   451.74  1176.24     0.46     2.24     1.97     6.35
 HUB     13.89   583.79   360.88   458.89  1172.78     0.50     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    605.52   546.19   316.59     0.46  5458.05     0.92     0.91
 MEAN   531.56   509.13   234.82     0.43  4920.73     0.92     0.91     0.91     1.50
 HUB    445.48   466.62    84.60     0.40  5014.83     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     11.02     1.17     9.61   609.98     1.05   587.37   523.33     0.16
 MEAN    10.85     1.15     9.41   607.21     1.04   583.75   522.35     0.17
 HUB     10.88     1.16     9.21   607.70     1.04   580.33   522.56     0.19

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.99    35.42    31.50     3.92     0.93     0.42     1.40
 MEAN    33.30    27.47    23.50     3.97     0.93     0.40     1.62
 HUB     38.18    10.45     6.50     3.95     0.93     0.41     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   582.1722   298.4095   499.8763  1173.4929     0.4961    -0.1145     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.9031     9.2352   581.0850   522.7441     0.1842    30.8358    32.4000     1.5642

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   494.8693   110.9847   482.2634  1181.0870     0.4190     0.1700     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.8881     9.6646   588.6333   522.6514   432.2457     0.0199     0.3418

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   490.8081     0.0000   490.8081  1181.3777     0.4155     0.2549     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6602   588.9559   522.5999     0.0000     0.0600     0.0374     0.1671

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8817    10.8616     1.1531   608.2917    26.4296   241.3040     1.8706

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 164628.641       0.449     596.777  586009.438   0.222703E-03

Melt Ratio at Stator LE, Throat, TE
0.40180E-01 0.48859E-01 0.69882E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.294   EfDer =  1.000    SH =  0.237854E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.147    3675.210      10.862     608.291       1.000       1.000       0.980
 W Kg/sec =  29.158  Wdry =  64.131  WH2O = 0.015  lbm/sec   H2O =   0.174g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     94.015    3393.785       1.380       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  84414.961   50327.969       1.851     509.668     275.284     384.739       1.398

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   397.51    -0.14   397.51     0.33     0.60   542.56
 MEAN    15.91     0.00    -0.02   397.51    -0.14   397.51     0.33     0.54
 HUB     13.07     0.00    -0.02   397.51    -0.14   397.51     0.33     0.49

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.93    47.36     8.57   587.56   709.51    10.06   595.61   522.57     0.15
 MEAN    52.09    44.80     7.29   510.37   647.01    10.06   595.61   522.57     0.15
 HUB     46.53    38.84     7.69   419.18   577.79    10.06   595.61   522.57     0.15

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   494.85   287.12   403.04  1207.34      0.41     2.05     1.78     7.43
 MEAN    15.50   498.04   283.40   409.54  1203.25      0.41     2.13     1.86     5.75
 HUB     12.59   529.64   327.28   416.41  1199.30      0.44     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    575.38   495.52   288.26     0.41  5153.41      0.92     0.91
 MEAN   497.04   461.92   213.65     0.38  4394.15      0.92     0.91     0.91     1.54
 HUB    403.79   423.38    76.51     0.35  4122.30      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.52     1.15    11.17   634.82     1.04   615.17   531.83     0.10
 MEAN    12.26     1.13    10.92   630.91     1.04   611.00   530.51     0.11
 HUB     12.17     1.12    10.67   629.51     1.03   607.00   530.06     0.12

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.47    35.57    31.50     4.07     0.93     0.44     1.40
 MEAN    34.68    27.55    23.50     4.05     0.93     0.42     1.64
 HUB     38.17    10.41     6.50     3.91     0.93     0.41     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   552.5645   288.5931   471.2128  1199.4927     0.4607    -0.1926     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.2900    10.6464   607.2479   530.7774     0.1192    31.4853    33.0000     1.5147
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   476.2717   108.7571   463.6881  1205.6948     0.3950     0.0818     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.2663    11.0312   613.5446   530.6893   410.5396     0.0369     0.3534

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   461.6923     0.0000   461.6923  1206.7394     0.3826     0.2775     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.1025   614.6416   530.6838     0.0000     0.0600     0.0374     0.1326

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8832    12.2656     1.1293   631.7411    23.4547   249.0926     1.9310

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 146188.078       0.442     529.930  596961.438   0.247301E-03

Melt Ratio at Stator LE, Throat, TE
0.14334E+00 0.15473E+00 0.18498E+00
 trTOT =     1.3099   Tt4 =   631.7411   T1  =   482.2704

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    930538.75   3373.1919    175.9648      2.3738      0.8684      5.6575      1.3099     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 69.9%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.995   EfDer =  0.999    SH =  0.121864E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     63.035    3644.727       5.167     482.270       1.000       1.000       0.980
  W Kg/sec =  28.652  Wdry =  63.027  WH2O = 0.008  lbm/sec   H2O =   0.053g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     172.914    3779.859       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 140707.375   49457.773       1.643     831.557     506.171     619.754       1.224

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
  TIP     20.63     0.00    -0.02   406.10    -0.14   406.10     0.39     0.73   680.47
  MEAN    17.06     0.00    -0.02   406.10    -0.14   406.10     0.39     0.64
  HUB     12.51     0.00    -0.02   406.10    -0.14   406.10     0.39     0.54

        BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
  TIP     58.25    50.47     7.78   656.16   771.79     4.67   469.01   465.19     2.71
  MEAN    53.20    47.20     6.00   542.62   677.87     4.67   469.01   465.19     2.71
  HUB     44.43    38.62     5.81   397.90   568.64     4.67   469.01   465.19     2.71

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
  TIP     20.63   641.89   370.98   523.83  1076.01      0.60     7.29     6.52    16.04
  MEAN    18.04   675.62   409.09   537.69  1070.51      0.63     7.43     6.80    12.53
  HUB     15.00   776.63   533.18   564.69  1060.91      0.73     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
  TIP    656.16   596.43   285.19     0.55  7656.14      0.92     0.91
  MEAN   573.66   562.31   164.57     0.53  7380.67      0.92     0.91     0.91     1.34
  HUB    477.09   567.47    56.08     0.53  7999.43      0.92     0.91

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
  TIP       6.70     1.30     5.28   521.43     1.08   488.30   487.12     1.47
  MEAN      6.64     1.28     5.09   520.02     1.08   483.32   486.53     1.74
  HUB       6.77     1.31     4.76   523.19     1.08   474.69   488.49     2.35

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
  TIP     35.31    28.56    24.20     4.36     0.93     0.36     1.80
  MEAN    37.26    17.02    12.70     4.32     0.92     0.31     2.22
  HUB     43.36    -5.67    -9.30     3.63     0.92     0.17     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   713.7106   408.2913   585.3896  1067.4764     0.6686    -0.0723     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.6863     4.9718   480.5901   487.3879     1.9337    34.8946    35.4000     0.5054

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   556.5621   136.1521   539.6517  1085.1464     0.5129     0.3214     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.6593     5.5775   496.6411   486.9215   554.9116     0.0263     0.4307

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   552.2631     0.0000   552.2631  1085.5403     0.5087     0.3528     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.5767   497.0268   486.8884     0.0000     0.0600     0.0381     0.3209
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8798     6.6397     1.2850   521.5445    39.2756   217.0037     1.6822

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 244275.156       0.567     870.144  672722.125   0.141389E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.990   EfDer =  1.000    SH =  0.162418E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     63.035    3644.727       6.640     521.544       1.000       1.000       0.980
 W Kg/sec =  28.652  Wdry =  63.024  WH2O = 0.010  lbm/sec   H2O =   0.081g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    139.939    3634.774       1.381       0.249      53.354      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 121765.500   49456.988       1.441     590.487     409.663     468.502       1.144

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   494.91    -0.17   494.91     0.45     0.75   651.81
 MEAN    18.08     0.00    -0.02   494.91    -0.17   494.91     0.45     0.70
 HUB     15.21     0.00    -0.02   494.91    -0.17   494.91     0.45     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.87    46.36     6.51   653.62   819.98     5.78   501.86   486.88     1.14
 MEAN    49.29    42.30     6.99   575.00   758.79     5.78   501.86   486.88     1.14
 HUB     44.36    37.84     6.52   483.77   692.20     5.78   501.86   486.88     1.14

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   576.37   301.05   491.50  1117.03     0.52     2.33     2.04     9.02
 MEAN    18.01   590.64   313.65   500.48  1112.89     0.53     2.40     2.13     7.35
 HUB     15.22   642.58   390.76   510.11  1109.03     0.58     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    649.48   602.48   348.43     0.54  6150.96     0.92     0.91
 MEAN   572.83   563.61   259.18     0.51  5651.86     0.92     0.91     0.91     1.46
 HUB    484.19   518.59    93.43     0.47  5951.14     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.07     1.21     6.74   552.99     1.06   526.29   501.38     0.56
 MEAN     7.94     1.20     6.57   550.44     1.06   522.40   500.31     0.62
 HUB      8.02     1.21     6.40   551.97     1.06   518.78   501.06     0.69

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.49    35.33    31.50     3.83     0.93     0.40     1.40
 MEAN    32.07    27.38    23.50     3.88     0.93     0.38     1.63
 HUB     37.45    10.38     6.50     3.88     0.93     0.39     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   656.1992   314.5280   575.9075  1107.3002     0.5926    -0.1742     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   7.9939     6.3214   517.1979   500.9830     0.7247    28.6409    30.6000     1.9591

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   543.8175   115.2932   531.4555  1118.8447     0.4861     0.1570     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     7.9736     6.7976   528.0350   500.7610   491.5697     0.0241     0.3064

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   567.9688     0.0000   567.9688  1116.5325     0.5087     0.2149     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6808	525.8796	500.7564	0.0000	0.0600	0.0379	0.0757

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8805	7.9538	1.1979	551.8012	30.2584	245.3979	1.9023

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
188283.281	0.446	670.693	604122.313	0.170870E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 7.098 EfDer = 1.000 SH = 0.183868E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.035	3644.727	7.954	551.801	1.000	1.000	0.980

W Kg/sec = 28.652 Wdry = 63.023 WH2O = 0.012 lbm/sec H2O = 0.106g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
120.159	3533.717	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
105745.320	49456.570	1.551	545.479	351.781	424.468	1.207

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	465.26	-0.16	465.26	0.41	0.70	618.89
MEAN	17.74	0.00	-0.02	465.26	-0.16	465.26	0.41	0.65	
HUB	15.05	0.00	-0.02	465.26	-0.16	465.26	0.41	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.92	46.36	7.56	638.35	790.04	7.08	534.41	500.68	0.49
MEAN	50.50	43.40	7.10	564.19	731.41	7.08	534.41	500.68	0.49
HUB	45.82	38.84	6.98	478.68	667.65	7.08	534.41	500.68	0.49

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	553.61	298.93	465.97	1149.55	0.48	2.26	1.98	8.75
MEAN	17.51	566.27	310.78	473.37	1145.83	0.49	2.34	2.07	6.78
HUB	14.85	615.25	383.21	481.34	1142.33	0.54	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	630.08	571.66	331.16	0.50	5924.94	0.92	0.91		
MEAN	556.82	533.49	246.04	0.47	5443.56	0.92	0.91	0.91	1.49
HUB	472.32	489.52	89.12	0.43	5693.02	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.50	1.19	8.12	582.08	1.05	557.46	513.10	0.28
MEAN	9.37	1.18	7.94	579.62	1.05	553.86	512.16	0.30
HUB	9.43	1.19	7.76	580.90	1.05	550.48	512.71	0.33

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.68	35.40	31.50	3.90	0.93	0.41	1.40
MEAN	33.29	27.46	23.50	3.96	0.93	0.40	1.62
HUB	38.52	10.49	6.50	3.99	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	624.5403	312.8213	540.5492	1141.3019	0.5472	-0.1608	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4185	7.7030	549.5353	512.6795	0.3390	30.0584	31.5000	1.4416

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	521.7470	113.8156	509.1816	1151.0911	0.4533	0.1590	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4007	8.1796	558.9996	512.5361	451.3937	0.0219	0.3280

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   532.1888     0.0000   532.1888  1150.1512     0.4627     0.2390     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.1130   558.1181   512.5040     0.0000     0.0600     0.0373     0.1143

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8821     9.3777     1.1790   580.8654    29.0662   235.6037     1.8264

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 180948.500       0.456     644.565  579694.813   0.195423E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 7.336   EfDer =  0.999    SH =  0.214678E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     63.035    3644.727       9.378     580.865       1.000       1.000       0.980
 W Kg/sec =  28.652  Wdry =  63.021  WH2O = 0.014  lbm/sec   H2O =   0.140g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    104.563    3444.176       1.381       0.249      53.355      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  93064.078   49455.973       1.677     513.330     306.145     395.845       1.293

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   435.11    -0.15   435.11     0.38     0.65   578.86
 MEAN    16.97     0.00    -0.02   435.11    -0.15   435.11     0.38     0.60
 HUB     14.32     0.00    -0.02   435.11    -0.15   435.11     0.38     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     54.62    46.36     8.26   612.59   751.51     8.52   565.66   512.47     0.26
 MEAN    51.14    43.80     7.34   539.77   693.42     8.52   565.66   512.47     0.26
 HUB     46.32    37.84     8.48   455.47   630.00     8.52   565.66   512.47     0.26

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   524.77   289.11   437.95  1179.15     0.45     2.16     1.89     8.34
 MEAN    16.57   534.15   296.22   444.49  1175.53     0.45     2.24     1.97     6.35
 HUB     13.89   576.58   358.61   451.49  1172.07     0.49     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    600.50   537.37   311.40     0.46  5461.22     0.92     0.91
 MEAN   527.15   500.90   230.94     0.43  4911.98     0.92     0.91     0.91     1.51
 HUB    441.79   459.09    83.18     0.39  4983.25     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.96     1.17     9.58   608.76     1.05   586.65   522.93     0.17
 MEAN    10.79     1.15     9.38   605.96     1.04   583.04   521.93     0.18
 HUB     10.81     1.15     9.18   606.32     1.04   579.62   522.09     0.19

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.43    35.41    31.50     3.91     0.93     0.42     1.40
 MEAN    33.68    27.45    23.50     3.95     0.93     0.41     1.62
 HUB     38.46    10.44     6.50     3.94     0.93     0.42     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   574.7988   297.8811   491.5898  1172.8910     0.4901    -0.1128     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.8409     9.2186   580.4873   522.3145     0.1903    31.2140    32.4000     1.1860

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   486.6958   109.1516   474.2981  1180.4478     0.4123     0.1780     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.8269     9.6461   587.9949   522.2230   432.2457     0.0195     0.3471

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   482.7048     0.0000   482.7048  1180.7279     0.4088     0.2607     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6415   588.3066   522.1727     0.0000     0.0600     0.0371     0.1749

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8822    10.8010     1.1518   607.0092    26.1470   239.1834     1.8541

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 162868.422       0.452     580.161  575240.938   0.226708E-03

Melt Ratio at Stator LE, Throat, TE
0.41421E-01 0.50140E-01 0.71233E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.496   EfDer =  0.999    SH =  0.242102E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     63.035    3644.727      10.801     607.008       1.000       1.000       0.980
 W Kg/sec =  28.652  Wdry =  63.019  WH2O = 0.015  lbm/sec   H2O =   0.177g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     92.805    3369.190       1.380       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  83107.953   49455.438       1.876     509.668     271.743     384.739       1.416

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   391.35    -0.13   391.35     0.33     0.59   538.62
 MEAN    15.91     0.00    -0.02   391.35    -0.13   391.35     0.33     0.54
 HUB     13.07     0.00    -0.02   391.35    -0.13   391.35     0.33     0.48

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.12    47.36     8.76   582.69   702.03    10.03   594.72   522.15     0.15
 MEAN    52.30    44.80     7.50   506.13   639.89    10.03   594.72   522.15     0.15
 HUB     46.74    38.84     7.90   415.71   571.03    10.03   594.72   522.15     0.15

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   489.79   286.64   397.16  1206.22      0.41     2.05     1.78     7.43
 MEAN    15.50   492.57   282.50   403.51  1202.16      0.41     2.13     1.86     5.75
 HUB     12.59   523.46   325.16   410.21  1198.24      0.44     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    570.60   488.23   283.96     0.40  5144.77      0.92     0.91
 MEAN   492.92   455.07   210.42     0.38  4380.26      0.92     0.91     0.91     1.55
 HUB    400.44   417.06    75.28     0.35  4095.58      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.43     1.15    11.12   633.27     1.04   614.02   531.35     0.11
 MEAN    12.18     1.13    10.87   629.37     1.04   609.90   530.03     0.12
 HUB     12.09     1.12    10.62   627.91     1.03   605.93   529.55     0.12

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.82    35.56     31.50     4.06     0.93     0.45     1.40
 MEAN    35.00    27.54     23.50     4.04     0.93     0.42     1.64
 HUB     38.40    10.40      6.50     3.90     0.93     0.41     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   545.9414   287.6828   463.9942  1198.5315     0.4555    -0.1906     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.2068    10.6075   606.2706   530.2855     0.1239    31.7995    33.0000     1.2005
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   468.9604   107.0875   456.5700  1204.7094     0.3893     0.0899     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.1847    10.9910   612.5381   530.1994   410.5396     0.0362     0.3577

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   454.7002     0.0000   454.7002  1205.7153     0.3771     0.2823     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.0590   613.5947   530.1933     0.0000     0.0600     0.0371     0.1397

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8835    12.1835     1.1280   630.1803    23.1765   247.3121     1.9171

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 144452.453       0.444     514.561  586591.063   0.251739E-03

Melt Ratio at Stator LE, Throat, TE
0.14455E+00 0.15596E+00 0.18618E+00
 trTOT =     1.3067   Tt4 =   630.1803   T1  =   482.2704

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    920827.81   3280.1248    172.9144      2.3578      0.8699      5.9955      1.3067     37.3740
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50µm, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.969   EfDer =  0.985    SH =  0.114976E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     73.930    3973.502       5.167     482.271       1.000       1.000       0.980
  W Kg/sec =  33.604  Wdry =  73.921  WH2O = 0.009  lbm/sec   H2O =   0.048g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    202.801    4120.825       1.381       0.248      53.352      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 171010.438   58006.203       1.401     831.557     593.652     619.754       1.044

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   493.56    -0.17   493.56     0.47     0.83   741.85
 MEAN    17.06     0.00    -0.02   493.56    -0.17   493.56     0.47     0.74
 HUB     12.51     0.00    -0.02   493.56    -0.17   493.56     0.47     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.40     50.47     4.93   715.35   869.24     4.45   462.68   465.30     3.25
 MEAN    50.17     47.20     2.97   591.57   770.56     4.45   462.68   465.30     3.25
 HUB     41.32     38.62     2.70   433.79   657.21     4.45   462.68   465.30     3.25

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   741.37   362.70   646.58  1066.64      0.70     7.29     6.52    16.04
 MEAN    18.04   787.07   421.49   664.70  1061.12      0.74     7.43     6.80    12.53
 HUB     15.00   928.87   591.96   715.81  1047.12      0.89     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    715.35   736.50   352.65     0.69  7486.10      0.92     0.90
 MEAN   625.41   695.28   203.92     0.66  7604.87      0.92     0.90     0.90     1.21
 HUB    520.13   719.40    71.83     0.69  8881.49      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.78     1.31     4.93   524.02     1.09   479.82   488.58     1.80
 MEAN     6.81     1.32     4.75   524.68     1.09   474.87   489.10     2.15
 HUB      7.12     1.38     4.29   531.80     1.10   462.42   493.50     3.40

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.29    28.61    24.20     4.41     0.93     0.27     1.80
 MEAN    32.38    17.05    12.70     4.35     0.91     0.22     2.22
 HUB     39.59    -5.73    -9.30     3.57     0.91     0.07     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950      1.000       0.985       1.812     33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   849.9094   420.6696   738.5005  1054.2638     0.8062    -0.1057     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.8831     4.5082   468.7473   490.4814     2.7130    29.6670    35.4000     5.7330

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   691.5118   169.1649   670.5012  1076.1078     0.6426     0.2318     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.8130     5.1774   488.3825   489.5546   554.9116     0.0412     0.3616

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   692.9905     0.0000   692.9905  1075.9021     0.6441     0.2576     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.1200	488.2229	489.4227	0.0000	0.0600	0.0711	0.2063

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8263	6.7456	1.3055	526.8323	44.5619	237.2687	1.8393

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
277116.969	0.542	1157.747	817600.875	0.128803E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.618 EfDer = 0.990 SH = 0.143046E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.930	3973.502	6.746	526.832	1.000	1.000	0.980

W Kg/sec = 33.604 Wdry = 73.919 WH2O = 0.011 lbm/sec H2O = 0.068g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
162.364	3942.716	1.381	0.248	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
149419.844	58005.563	1.242	590.487	475.303	468.502	0.986

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	607.31	-0.21	607.31	0.56	0.86	707.04
MEAN	18.08	0.00	-0.02	607.31	-0.21	607.31	0.56	0.80	
HUB	15.21	0.00	-0.02	607.31	-0.21	607.31	0.56	0.74	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.57	46.36	3.21	712.58	936.42	5.47	497.18	489.28	1.14
MEAN	45.92	42.30	3.62	626.87	872.95	5.47	497.18	489.28	1.14
HUB	40.98	37.84	3.14	527.41	804.49	5.47	497.18	489.28	1.14

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	660.13	282.82	596.47	1114.63	0.59	2.33	2.04	9.02
MEAN	18.01	680.22	308.30	606.34	1111.00	0.61	2.40	2.13	7.35
HUB	15.22	742.59	412.91	617.20	1107.74	0.67	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	708.07	732.54	425.25	0.66	5779.52	0.92	0.91		
MEAN	624.50	683.83	316.20	0.62	5556.27	0.92	0.91	0.91	1.37
HUB	527.86	627.82	114.96	0.57	6288.86	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.20	1.22	6.49	559.05	1.06	524.02	503.64	0.51
MEAN	8.14	1.21	6.34	557.81	1.06	520.61	503.15	0.56
HUB	8.34	1.24	6.19	561.89	1.07	517.56	504.97	0.61

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.37	35.49	31.50	3.99	0.93	0.33	1.40
MEAN	26.95	27.54	23.50	4.04	0.92	0.32	1.63
HUB	33.78	10.55	6.50	4.05	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.990	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	778.8822	309.1667	714.8940	1100.4677	0.7078	-0.2337	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2084	5.8989	510.8253	504.0860	0.7459	23.3868	30.6000	7.2132

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	672.3079	142.5341	657.0251	1113.7885	0.6036	0.0268	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.1502	6.3903	523.2526	503.7094	491.5697	0.0408	0.2245

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	714.9500	0.0000	714.9500	1108.6941	0.6449	0.1032	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.1372	518.5026	503.6655	0.0000	0.0600	0.0724	-0.1073

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8276	8.0907	1.1994	559.5821	32.7515	279.2954	2.1651

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
203777.172	0.406	851.346	740021.500	0.148649E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.993 EfDer = 0.992 SH = 0.157590E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.930	3973.502	8.091	559.582	1.000	1.000	0.980

W Kg/sec = 33.604 Wdry = 73.918 WH2O = 0.012 lbm/sec H2O = 0.087g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
139.516	3825.601	1.381	0.249	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
128622.125	58005.234	1.336	545.479	408.441	424.468	1.039

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	565.91	-0.19	565.91	0.50	0.80	670.01
MEAN	17.74	0.00	-0.02	565.91	-0.19	565.91	0.50	0.74	
HUB	15.05	0.00	-0.02	565.91	-0.19	565.91	0.50	0.68	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.89	46.36	4.53	695.93	897.14	6.82	533.85	503.46	0.41
MEAN	47.39	43.40	3.99	615.09	835.96	6.82	533.85	503.46	0.41
HUB	42.69	38.84	3.85	521.86	769.94	6.82	533.85	503.46	0.41

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	630.01	285.92	561.39	1151.43	0.55	2.26	1.98	8.75
MEAN	17.51	648.14	309.11	569.68	1148.06	0.56	2.34	2.07	6.78
HUB	14.85	707.10	406.18	578.81	1144.99	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	686.92	689.90	401.00	0.60	5667.99	0.92	0.91		
MEAN	607.05	642.88	297.93	0.56	5414.96	0.92	0.91	0.91	1.40
HUB	514.93	588.93	108.75	0.51	6034.66	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.70	1.20	7.93	591.17	1.06	559.27	515.92	0.22
MEAN	9.62	1.19	7.77	589.76	1.05	556.00	515.42	0.24
HUB	9.81	1.21	7.61	593.21	1.06	553.03	516.77	0.25

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.99	35.54	31.50	4.04	0.93	0.34	1.40
MEAN	28.48	27.61	23.50	4.11	0.92	0.34	1.62
HUB	35.06	10.64	6.50	4.14	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	730.3590	311.1412	660.7689	1140.2560	0.6405	-0.2029	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.6901	7.3770	548.5259	516.0888	0.2850	25.2147	31.5000	6.2853

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	637.3753	139.0391	622.0253	1150.8380	0.5538	0.0409	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.6431	7.8492	558.7398	515.8715	451.3937	0.0342	0.2572

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	654.4291	0.0000	654.4291	1148.9849	0.5696	0.1491	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.7219	556.9743	515.7950	0.0000	0.0600	0.0583	-0.0247

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8482	9.5963	1.1861	591.3758	31.7958	264.8535	2.0531

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
197926.875	0.419	826.905	699976.250	0.165407E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 4.577 EfDer = 0.995 SH = 0.179594E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.930	3973.502	9.596	591.375	1.000	1.000	0.980

W Kg/sec = 33.604 Wdry = 73.916 WH2O = 0.013 lbm/sec H2O = 0.114g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
120.921	3721.344	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
111872.602	58004.734	1.450	513.330	354.033	395.845	1.118

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	523.04	-0.18	523.04	0.45	0.73	625.45
MEAN	16.97	0.00	-0.02	523.04	-0.18	523.04	0.45	0.68	
HUB	14.32	0.00	-0.02	523.04	-0.18	523.04	0.45	0.62	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.94	46.36	5.58	667.85	848.43	8.37	569.41	515.71	0.19
MEAN	48.38	43.80	4.58	588.47	787.45	8.37	569.41	515.71	0.19
HUB	43.52	37.84	5.68	496.55	721.33	8.37	569.41	515.71	0.19

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	593.18	281.97	521.88	1185.30	0.50	2.16	1.89	8.34
MEAN	16.57	607.72	298.11	529.58	1181.76	0.51	2.24	1.97	6.35
HUB	13.89	659.39	381.34	537.93	1178.47	0.56	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	654.67	641.30	372.70	0.54	5327.01	0.92	0.91		
MEAN	574.70	597.46	276.60	0.51	4943.89	0.92	0.91	0.91	1.43
HUB	481.64	547.20	100.30	0.46	5299.44	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.28	1.18	9.53	621.04	1.05	592.79	526.39	0.12
MEAN	11.16	1.16	9.34	618.91	1.05	589.25	525.66	0.13
HUB	11.28	1.17	9.14	620.89	1.05	585.97	526.38	0.13

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	28.38	35.53	31.50	4.03	0.93	0.36	1.40
MEAN	29.38	27.58	23.50	4.08	0.92	0.36	1.62
HUB	35.33	10.56	6.50	4.06	0.92	0.38	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	661.9050	299.7860	590.1241	1177.5358	0.5621	-0.1356	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
11.2195	9.0781	585.1064	526.1412	0.1381	26.9308	32.4000	5.4692

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   584.9426   131.1855   570.0422  1185.2654     0.4935     0.0811     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    11.1851    9.4900   592.8094   526.0141   432.2457     0.0281     0.2866

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   580.2761     0.0000   580.2761  1185.6703     0.4894     0.1902     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.4854   593.2487   525.9433     0.0000     0.0600     0.0467     0.0787

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8637    11.1497     1.1619   620.2776    28.9048   265.1896     2.0557

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 180042.766       0.420     752.188  685883.063   0.189766E-03

Melt Ratio at Stator LE, Throat, TE
0.22326E-01 0.30146E-01 0.49383E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.165   EfDer =  0.998    SH =  0.203628E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     73.930    3973.502      11.150     620.277       1.000       1.000       0.980
 W Kg/sec =  33.604  Wdry =  73.915  WH2O = 0.015  lbm/sec   H2O =   0.147g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    106.588    3633.612       1.380       0.249      53.355      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  98474.133   58004.184       1.633     509.668     312.097     384.739       1.233

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   463.71    -0.16   463.71     0.39     0.66   580.90
 MEAN    15.91     0.00    -0.02   463.71    -0.16   463.71     0.39     0.60
 HUB     13.07     0.00    -0.02   463.71    -0.16   463.71     0.39     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.88    47.36     6.52   635.25   786.62    10.06   603.02   525.90     0.10
 MEAN    49.97    44.80     5.17   551.79   720.88    10.06   603.02   525.90     0.10
 HUB     44.35    38.84     5.51   453.21   648.51    10.06   603.02   525.90     0.10

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   547.90   287.18   466.60  1216.81      0.45     2.05     1.78     7.43
 MEAN    15.50   555.58   288.83   474.60  1212.48      0.46     2.13     1.86     5.75
 HUB     12.59   594.80   347.06   483.05  1208.35      0.49     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    622.08   574.34   334.89     0.47  5154.96      0.92     0.91
 MEAN   537.38   535.75   248.56     0.44  4478.71      0.92     0.91     0.91     1.47
 HUB    436.56   491.27    89.50     0.41  4371.60      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.96     1.16    11.29   648.96     1.05   624.87   535.53     0.07
 MEAN    12.71     1.14    11.02   645.20     1.04   620.43   534.31     0.08
 HUB     12.67     1.14    10.76   644.61     1.04   616.21   534.14     0.08

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.61    35.67    31.50     4.17     0.93     0.40     1.40
 MEAN    31.32    27.64    23.50     4.14     0.92     0.38     1.64
 HUB     35.70    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   623.7801   294.1259   550.0832  1207.1307     0.5167    -0.2160     2.0437
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     Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
    12.7416     10.6454    615.0401    534.6289     0.0843    28.1331    33.0000     4.8669

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG        Cth         Cuth        Cmth       Aoth          Machth     cp 2-Th     Stat Chord
    15.2185    557.3695    127.2758    542.6432   1213.2960     0.4594     -0.0133     2.1315

    BlockageTh  PtTh       PsTh       TsTh       TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     12.6900    11.0014    621.3315    534.4940   410.5396     0.0494     0.3069

     VANED DIFFUSER EXIT:
    R4         C4          Cu4        Cm4        Ao4           Mach4      cp 3-4   Stator Gap
    14.7013    538.7160     0.0000    538.7160   1214.8634     0.4434     0.2239     0.5109

    Blockage4   Ps4       Ts4        TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     11.1147   622.9728   534.5038      0.0000     0.0600     0.0446     0.0513

     STAGE EXIT CONDITIONS, STAGE             5
     Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
     0.8708     12.6984      1.1389    646.2527    25.9803   269.3834     2.0882

Del Enthalpy   Del_H/U^2    GHP       Reynolds#        SH
 161940.484       0.418     676.560  690968.938   0.211928E-03

Melt Ratio at Stator LE, Throat, TE
0.12172E+00 0.13243E+00 0.16199E+00
 trTOT =     1.3400   Tt4 =    646.2527   T1  =   482.2715

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP         MassFloS1cor   OPR         Efficiency  Rotor1Inc     TR       AxHubLen
   1020804.25   4264.7456     202.8008      2.4575       0.8275      2.9688      1.3400     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 75.6%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.316   EfDer =  0.998    SH =  0.120376E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      65.262    3705.060       5.167     482.271       1.000       1.000       0.980
  W Kg/sec =  29.664  Wdry =  65.254  WH2O = 0.008  lbm/sec   H2O =   0.052g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     179.024    3842.429       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 146607.906   51205.289       1.587     831.557     524.054     619.754       1.183

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1       CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   423.13    -0.15   423.13     0.40     0.75   691.73
 MEAN    17.06     0.00    -0.02   423.13    -0.15   423.13     0.40     0.66
 HUB     12.51     0.00    -0.02   423.13    -0.15   423.13     0.40     0.56

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.62    50.47     7.15   667.02   790.04      4.63   467.87   465.21     2.80
 MEAN    52.52    47.20     5.32   551.60   695.32      4.63   467.87   465.21     2.80
 HUB     43.72    38.62     5.10   404.48   585.46      4.63   467.87   465.21     2.80

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   659.76   369.15   546.82  1074.45      0.61     7.29     6.52    16.04
 MEAN    18.04   695.89   411.17   561.43  1068.94      0.65     7.43     6.80    12.53
 HUB     15.00   803.52   543.76   591.58  1058.77      0.76     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    667.02   622.69   297.87     0.58  7618.59      0.92     0.91
 MEAN   583.15   587.18   171.98     0.55  7418.41      0.92     0.91     0.91     1.31
 HUB    484.99   594.49    58.77     0.56  8158.30      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.22   521.88     1.08   486.88   487.37     1.51
 MEAN     6.67     1.29     5.03   520.84     1.08   481.90   486.98     1.79
 HUB      6.84     1.32     4.69   524.69     1.09   472.78   489.34     2.48

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.02    28.58    24.20     4.38     0.93     0.34     1.80
 MEAN    36.22    17.03    12.70     4.33     0.92     0.29     2.22
 HUB     42.59    -5.67    -9.30     3.63     0.92     0.15     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   737.5757   410.3744   612.8709  1065.4132     0.6923    -0.0774     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7227     4.8976   478.7310   487.9099     2.0269    33.8060    35.4000     1.5940

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   581.2339   142.1875   563.5739  1083.6951     0.5363     0.3034     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6914     5.5147   495.3102   487.3918   554.9116     0.0278     0.4164

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   577.1659     0.0000   577.1659  1084.0847     0.5324     0.3354     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5097   495.6920   487.3470     0.0000     0.0600     0.0417     0.3006
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8741     6.6669     1.2903   522.4712    40.2020   221.2746     1.7153

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 250031.047       0.562     922.117  700932.563   0.138611E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.292   EfDer =  1.000    SH =  0.158126E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     65.262    3705.060       6.667     522.471       1.000       1.000       0.980
 W Kg/sec =  29.664  Wdry =  65.252  WH2O = 0.010  lbm/sec   H2O =   0.078g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    144.419    3691.664       1.381       0.249      53.353      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 126862.750   51204.535       1.397     590.487     422.776     468.502       1.108

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   515.63    -0.18   515.63     0.47     0.77   662.02
 MEAN    18.08     0.00    -0.02   515.63    -0.18   515.63     0.47     0.72
 HUB     15.21     0.00    -0.02   515.63    -0.18   515.63     0.47     0.65

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.19     46.36     5.83   664.44   841.18     5.73   501.10   487.32     1.13
 MEAN    48.59     42.30     6.29   584.52   779.58     5.73   501.10   487.32     1.13
 HUB     43.65     37.84     5.81   491.78   712.67     5.73   501.10   487.32     1.13

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   591.28   297.67   510.88  1116.70      0.53     2.33     2.04     9.02
 MEAN    18.01   606.84   312.60   520.13  1112.63      0.55     2.40     2.13     7.35
 HUB     15.22   660.92   394.80   530.05  1108.85      0.60     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    660.23   626.46   362.56     0.56  6082.10      0.92     0.91
 MEAN   582.31   585.90   269.71     0.53  5633.10      0.92     0.91     0.91     1.44
 HUB    492.20   538.92    97.40     0.49  6012.79      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.10     1.22     6.71   554.08     1.06   525.98   501.82     0.55
 MEAN     7.99     1.20     6.54   551.75     1.06   522.15   500.85     0.61
 HUB      8.09     1.21     6.38   553.72     1.06   518.61   501.79     0.67

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     30.23    35.36    31.50     3.86     0.93     0.38     1.40
 MEAN    31.01    27.41    23.50     3.91     0.93     0.37     1.63
 HUB     36.68    10.41     6.50     3.91     0.93     0.38     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   677.4536   313.4760   600.5632  1106.3429     0.6123    -0.1836     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.0453     6.2652   516.3025   501.5639     0.7211    27.5632    30.6000     3.0368

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   566.6553   120.1349   553.7741  1118.1534     0.5068     0.1330     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.0209     6.7457   527.3795   501.3245   491.5697     0.0261     0.2909

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   592.7982     0.0000   592.7982  1115.5443     0.5314     0.1967     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6153	524.9463	501.3198	0.0000	0.0600	0.0406	0.0470

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8767	7.9990	1.1998	553.1844	30.7150	251.7875	1.9518

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
191120.688	0.438	704.855	630043.000	0.165919E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.487 EfDer = 1.000 SH = 0.178012E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.262	3705.060	7.999	553.184	1.000	1.000	0.980

W Kg/sec = 29.664 Wdry = 65.250 WH2O = 0.012 lbm/sec H2O = 0.102g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
123.857	3587.719	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
109851.781	51204.137	1.504	545.479	362.604	424.468	1.171

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	483.33	-0.17	483.33	0.43	0.72	628.35
MEAN	17.74	0.00	-0.02	483.33	-0.17	483.33	0.43	0.67	
HUB	15.05	0.00	-0.02	483.33	-0.17	483.33	0.43	0.61	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.33	46.36	6.97	648.92	809.27	7.06	534.41	501.22	0.47
MEAN	49.89	43.40	6.49	573.53	750.16	7.06	534.41	501.22	0.47
HUB	45.20	38.84	6.36	486.61	685.97	7.06	534.41	501.22	0.47

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	567.00	296.89	483.05	1150.03	0.49	2.26	1.98	8.75
MEAN	17.51	580.80	310.72	490.69	1146.35	0.51	2.34	2.07	6.78
HUB	14.85	631.75	387.53	498.93	1142.90	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	640.51	592.80	343.62	0.52	5884.78	0.92	0.91		
MEAN	566.03	553.14	255.32	0.48	5442.51	0.92	0.91	0.91	1.47
HUB	480.14	507.45	92.61	0.44	5757.33	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.57	1.20	8.12	583.76	1.06	557.93	513.69	0.26
MEAN	9.44	1.18	7.94	581.46	1.05	554.36	512.82	0.29
HUB	9.53	1.19	7.76	583.10	1.05	551.03	513.51	0.31

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.58	35.43	31.50	3.93	0.93	0.40	1.40
MEAN	32.34	27.49	23.50	3.99	0.93	0.39	1.62
HUB	37.84	10.52	6.50	4.02	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	642.8152	312.7542	561.6015	1141.3477	0.5632	-0.1676	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4957	7.6768	549.5794	513.3654	0.3262	29.1133	31.5000	2.3867

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	541.8835	118.2082	528.8333	1151.2821	0.4707	0.1378	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4749	8.1566	559.1836	513.2144	451.3937	0.0233	0.3147

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	553.0262	0.0000	553.0262	1150.2433	0.4808	0.2241	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.0844	558.2064	513.1807	0.0000	0.0600	0.0386	0.0918

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8800	9.4509	1.1815	582.7703	29.5879	240.8769	1.8673

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
184193.906	0.449	679.309	602994.688	0.188743E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.811 EfDer = 1.000 SH = 0.207102E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.262	3705.060	9.451	582.770	1.000	1.000	0.980

W Kg/sec = 29.664 Wdry = 65.248 WH2O = 0.014 lbm/sec H2O = 0.135g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
107.596	3495.462	1.381	0.249	53.355	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
96390.492	51203.551	1.629	513.330	315.023	395.845	1.257

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	450.66	-0.16	450.66	0.39	0.66	587.48
MEAN	16.97	0.00	-0.02	450.66	-0.16	450.66	0.39	0.61	
HUB	14.32	0.00	-0.02	450.66	-0.16	450.66	0.39	0.56	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.11	46.36	7.75	622.73	768.82	8.53	566.46	513.14	0.24
MEAN	50.61	43.80	6.81	548.71	710.17	8.53	566.46	513.14	0.24
HUB	45.78	37.84	7.94	463.00	646.23	8.53	566.46	513.14	0.24

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	536.74	288.26	452.76	1180.42	0.45	2.16	1.89	8.34
MEAN	16.57	547.11	296.89	459.55	1176.79	0.46	2.24	1.97	6.35
HUB	13.89	591.30	362.91	466.83	1173.34	0.50	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	610.44	555.69	322.18	0.47	5445.33	0.92	0.91		
MEAN	535.88	517.98	238.99	0.44	4923.26	0.92	0.91	0.91	1.49
HUB	449.10	474.72	86.19	0.40	5043.10	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.06	1.17	9.62	611.05	1.05	587.91	523.67	0.16
MEAN	10.90	1.15	9.42	608.33	1.04	584.30	522.71	0.17
HUB	10.94	1.16	9.22	608.96	1.04	580.88	522.97	0.18

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.48	35.44	31.50	3.94	0.93	0.41	1.40
MEAN	32.86	27.48	23.50	3.98	0.93	0.40	1.62
HUB	37.86	10.46	6.50	3.96	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	589.9496	298.5599	508.8246	1173.9149	0.5025	-0.1165	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.9517	9.2371	581.5042	523.1137	0.1789	30.4029	32.4000	1.9971

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	503.7490	112.9762	490.9170	1181.5269	0.4264	0.1606	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.9356     9.6664   589.0724   523.0191   432.2457     0.0204     0.3356

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   499.6151     0.0000   499.6151  1181.8290     0.4227     0.2480     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6623   589.4069   522.9662     0.0000     0.0600     0.0380     0.1580

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8809    10.9084     1.1542   609.4429    26.6757   243.7628     1.8896

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 166161.391       0.446     612.805  597037.063   0.218711E-03

Melt Ratio at Stator LE, Throat, TE
0.38448E-01 0.47042E-01 0.67898E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.057   EfDer =  1.000    SH =  0.233673E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     65.262    3705.060      10.908     609.442       1.000       1.000       0.980
 W Kg/sec =  29.664  Wdry =  65.247  WH2O = 0.015  lbm/sec   H2O =   0.171g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     95.329    3418.116       1.380       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  85828.719   51203.020       1.826     509.668     279.132     384.739       1.378

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   404.16    -0.14   404.16     0.34     0.60   546.45
 MEAN   15.91     0.00    -0.02   404.16    -0.14   404.16     0.34     0.55
 HUB    13.07     0.00    -0.02   404.16    -0.14   404.16     0.34     0.49

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    55.70    47.36     8.34   592.34   717.20    10.08   596.33   522.94     0.14
 MEAN   51.86    44.80     7.06   514.51   654.38    10.08   596.33   522.94     0.14
 HUB    46.29    38.84     7.45   422.59   584.85    10.08   596.33   522.94     0.14

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   500.08   287.10   409.46  1208.27     0.41     2.05     1.78     7.43
 MEAN   15.50   503.74   283.91   416.12  1204.15     0.42     2.13     1.86     5.75
 HUB    12.59   536.16   329.28   423.14  1200.18     0.45     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   580.05   503.47   292.95     0.42  5153.07     0.92     0.91
 MEAN  501.08   469.38   217.17     0.39  4402.17     0.92     0.91     0.91     1.53
 HUB   407.07   430.23    77.79     0.36  4147.41     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    12.58     1.15    11.20   636.18     1.04   616.11   532.24     0.10
 MEAN   12.33     1.13    10.95   632.29     1.04   611.92   530.93     0.11
 HUB    12.24     1.12    10.69   630.96     1.04   607.89   530.50     0.12

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    35.04    35.58    31.50     4.08     0.93     0.44     1.40
 MEAN   34.31    27.56    23.50     4.06     0.93     0.41     1.64
 HUB    37.89    10.42     6.50     3.92     0.93     0.40     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   559.5643   289.1178   479.0857  1200.2535     0.4662    -0.1949     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.3558    10.6670   608.0218   531.1992     0.1151    31.1101    33.0000     1.8899
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   484.3023   110.5908   471.5065  1206.4578     0.4014     0.0719     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.3303    11.0509   614.3241   531.1083   410.5396     0.0378     0.3481

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   469.3644     0.0000   469.3644  1207.5466     0.3887     0.2717     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.1258   615.4670   531.1039     0.0000     0.0600     0.0378     0.1240

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8826    12.3302     1.1303   633.1395    23.7019   251.2256     1.9475

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 147729.500       0.439     544.828  607569.188   0.242960E-03

Melt Ratio at Stator LE, Throat, TE
0.14124E+00 0.15256E+00 0.18273E+00
 trTOT =     1.3128   Tt4 =   633.1395   T1  =   482.2706

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    939236.50   3463.9131    179.0239      2.3862      0.8663      5.3155      1.3128     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 72.7%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.657   EfDer =  0.999    SH =  0.121111E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      64.147    3675.210       5.167     482.270       1.000       1.000       0.980
  W Kg/sec =  29.158  Wdry =  64.139  WH2O = 0.008  lbm/sec   H2O =   0.052g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     175.965    3811.473       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 143637.328   50330.277       1.614     831.557     515.100     619.754       1.203

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   414.56    -0.14   414.56     0.39     0.74   686.16
 MEAN    17.06     0.00    -0.02   414.56    -0.14   414.56     0.39     0.65
 HUB     12.51     0.00    -0.02   414.56    -0.14   414.56     0.39     0.55

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.94    50.47     7.47   661.65   780.92      4.65   468.45   465.20     2.75
 MEAN    52.86    47.20     5.66   547.16   686.58      4.65   468.45   465.20     2.75
 HUB     44.07    38.62     5.45   401.22   577.02      4.65   468.45   465.20     2.75

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   650.72   370.21   535.15  1075.27      0.61     7.29     6.52    16.04
 MEAN    18.04   685.65   410.22   549.39  1069.76      0.64     7.43     6.80    12.53
 HUB     15.00   789.89   538.48   577.91  1059.88      0.75     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    661.65   609.36   291.44     0.57  7640.32      0.92     0.91
 MEAN   578.46   574.57   168.24     0.54  7401.19      0.92     0.91     0.91     1.33
 HUB    481.08   580.75    57.39     0.55  8078.91      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.25   521.68     1.08   487.63   487.26     1.49
 MEAN     6.65     1.29     5.06   520.44     1.08   482.64   486.76     1.76
 HUB      6.80     1.32     4.73   523.94     1.09   473.77   488.91     2.41

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.67    28.57    24.20     4.37     0.93     0.35     1.80
 MEAN    36.75    17.03    12.70     4.33     0.92     0.30     2.22
 HUB     42.98    -5.67    -9.30     3.63     0.92     0.16     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   725.4619   409.4241   598.8881  1066.4929     0.6802    -0.0747     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7052     4.9363   479.7035   487.6528     1.9765    34.3581    35.4000     1.0419

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   568.6710   139.1143   551.3927  1084.4683     0.5244     0.3126     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6762     5.5481   496.0190   487.1621   554.9116     0.0269     0.4237

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   564.4603     0.0000   564.4603  1084.8628     0.5203     0.3444     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5455   496.4052   487.1236     0.0000     0.0600     0.0397     0.3111
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8773     6.6544     1.2878   522.0181    39.7491   219.1088     1.6985

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 247217.250       0.565     896.160  686730.188   0.139987E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.648   EfDer =  1.000    SH =  0.160264E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.147    3675.210       6.654     522.018       1.000       1.000       0.980
 W Kg/sec =  29.158  Wdry =  64.136  WH2O = 0.010  lbm/sec   H2O =   0.080g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    142.158    3663.511       1.381       0.249      53.353      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 124270.961   50329.504       1.419     590.487     416.157     468.502       1.126

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   505.09    -0.17   505.09     0.46     0.76   656.97
 MEAN   18.08     0.00    -0.02   505.09    -0.17   505.09     0.46     0.71
 HUB    15.21     0.00    -0.02   505.09    -0.17   505.09     0.46     0.64

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    52.54    46.36     6.18   659.08   830.51     5.75   501.51   487.11     1.14
 MEAN   48.95    42.30     6.65   579.81   769.09     5.75   501.51   487.11     1.14
 HUB    44.01    37.84     6.17   487.82   702.32     5.75   501.51   487.11     1.14

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   583.72   299.56   500.99  1116.92     0.52     2.33     2.04     9.02
 MEAN   18.01   598.63   313.28   510.12  1112.80     0.54     2.40     2.13     7.35
 HUB    15.22   651.64   392.86   519.90  1108.98     0.59     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   654.92   614.22   355.35     0.55  6120.68     0.92     0.91
 MEAN  577.62   574.54   264.34     0.52  5645.27     0.92     0.91     0.91     1.45
 HUB   488.24   528.57    95.37     0.48  5983.21     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     8.09     1.22     6.73   553.57     1.06   526.19   501.62     0.55
 MEAN    7.97     1.20     6.56   551.12     1.06   522.32   500.59     0.61
 HUB     8.05     1.21     6.39   552.87     1.06   518.73   501.43     0.68

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    30.88    35.35    31.50     3.85     0.93     0.39     1.40
 MEAN   31.56    27.39    23.50     3.89     0.93     0.38     1.63
 HUB    37.08    10.40     6.50     3.90     0.93     0.39     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   666.6125   314.1573  587.9434  1106.8849     0.6022    -0.1787     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.0218     6.2965   516.8093  501.2869     0.7218    28.1170    30.6000     2.4830

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   554.9428  117.6518  542.3279  1118.5668     0.4961     0.1455     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     7.9997     6.7754   527.7711   501.0569   491.5697     0.0250     0.2990

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   579.9785     0.0000   579.9785  1116.1204     0.5196     0.2066     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6529	525.4903	501.0533	0.0000	0.0600	0.0387	0.0625

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8792	7.9794	1.1991	552.5200	30.5035	248.4767	1.9262

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
189806.906	0.443	688.048	616939.813	0.168387E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.805 EfDer = 1.000 SH = 0.180922E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.147	3675.210	7.979	552.520	1.000	1.000	0.980

W Kg/sec = 29.158 Wdry = 64.135 WH2O = 0.012 lbm/sec H2O = 0.104g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
121.965	3560.954	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
107742.344	50329.098	1.528	545.479	357.066	424.468	1.189

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	474.04	-0.16	474.04	0.42	0.71	623.66
MEAN	17.74	0.00	-0.02	474.04	-0.16	474.04	0.42	0.66	
HUB	15.05	0.00	-0.02	474.04	-0.16	474.04	0.42	0.60	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.64	46.36	7.28	643.69	799.54	7.07	534.46	500.97	0.48
MEAN	50.21	43.40	6.81	568.91	740.65	7.07	534.46	500.97	0.48
HUB	45.53	38.84	6.69	482.69	676.66	7.07	534.46	500.97	0.48

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	560.18	298.17	474.24	1149.86	0.49	2.26	1.98	8.75
MEAN	17.51	573.40	310.95	481.77	1146.15	0.50	2.34	2.07	6.78
HUB	14.85	623.36	385.48	489.88	1142.68	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	635.35	581.88	337.18	0.51	5910.06	0.92	0.91		
MEAN	561.47	543.01	250.52	0.47	5446.59	0.92	0.91	0.91	1.48
HUB	476.27	498.22	90.79	0.44	5726.89	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.54	1.20	8.13	582.98	1.06	557.76	513.42	0.27
MEAN	9.41	1.18	7.95	580.59	1.05	554.17	512.51	0.30
HUB	9.49	1.19	7.77	582.03	1.05	550.81	513.13	0.32

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.16	35.41	31.50	3.91	0.93	0.40	1.40
MEAN	32.84	27.47	23.50	3.97	0.93	0.40	1.62
HUB	38.20	10.50	6.50	4.00	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	633.4512	312.9921	550.7236	1141.4048	0.5550	-0.1640	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4619	7.6955	549.6346	513.0459	0.3320	29.6108	31.5000	1.8892

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	531.4478	115.9317	518.6488	1151.2759	0.4616	0.1491	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4427	8.1746	559.1786	512.8990	451.3937	0.0225	0.3218

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	542.2184	0.0000	542.2184	1150.2898	0.4714	0.2320	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1053	558.2524	512.8662	0.0000	0.0600	0.0378	0.1038

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8813	9.4193	1.1804	581.8654	29.3474	238.0829	1.8456

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
182697.922	0.453	662.278	591207.375	0.192073E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.090 EfDer = 1.000 SH = 0.210894E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.147	3675.210	9.419	581.865	1.000	1.000	0.980

W Kg/sec = 29.158 Wdry = 64.133 WH2O = 0.014 lbm/sec H2O = 0.138g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
106.030	3469.997	1.381	0.249	53.355	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
94671.078	50328.504	1.654	513.330	310.438	395.845	1.275

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	442.62	-0.15	442.62	0.38	0.66	583.20
MEAN	16.97	0.00	-0.02	442.62	-0.15	442.62	0.38	0.61	
HUB	14.32	0.00	-0.02	442.62	-0.15	442.62	0.38	0.55	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.38	46.36	8.02	617.71	760.04	8.53	566.13	512.83	0.25
MEAN	50.89	43.80	7.09	544.29	701.66	8.53	566.13	512.83	0.25
HUB	46.07	37.84	8.23	459.27	637.95	8.53	566.13	512.83	0.25

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	530.64	288.94	445.08	1179.87	0.45	2.16	1.89	8.34
MEAN	16.57	540.49	296.74	451.74	1176.24	0.46	2.24	1.97	6.35
HUB	13.89	583.79	360.88	458.89	1172.78	0.50	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	605.52	546.19	316.59	0.46	5458.05	0.92	0.91		
MEAN	531.56	509.13	234.82	0.43	4920.73	0.92	0.91	0.91	1.50
HUB	445.48	466.62	84.60	0.40	5014.83	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.02	1.17	9.61	609.98	1.05	587.37	523.33	0.16
MEAN	10.85	1.15	9.41	607.21	1.04	583.75	522.35	0.17
HUB	10.88	1.16	9.21	607.70	1.04	580.33	522.56	0.19

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.99	35.42	31.50	3.92	0.93	0.42	1.40
MEAN	33.30	27.47	23.50	3.97	0.93	0.40	1.62
HUB	38.18	10.45	6.50	3.95	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	582.1722	298.4095	499.8763	1173.4929	0.4961	-0.1145	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.9031	9.2352	581.0850	522.7441	0.1842	30.8358	32.4000	1.5642

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	494.8693	110.9847	482.2634	1181.0870	0.4190	0.1700	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.8881     9.6646   588.6333   522.6514   432.2457     0.0199     0.3418

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   490.8081     0.0000   490.8081  1181.3777     0.4155     0.2549     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6602   588.9559   522.5999     0.0000     0.0600     0.0374     0.1671

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8817    10.8616     1.1531   608.2917    26.4296   241.3040     1.8706

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 164628.641       0.449     596.777  586009.438   0.222703E-03

Melt Ratio at Stator LE, Throat, TE
0.40180E-01 0.48859E-01 0.69882E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.294   EfDer =  1.000    SH =  0.237854E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.147    3675.210      10.862     608.291       1.000       1.000       0.980
 W Kg/sec =  29.158  Wdry =  64.131  WH2O = 0.015  lbm/sec   H2O =   0.174g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     94.015    3393.785       1.380       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  84414.961   50327.969       1.851     509.668     275.284     384.739       1.398

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   397.51    -0.14   397.51     0.33     0.60   542.56
 MEAN    15.91     0.00    -0.02   397.51    -0.14   397.51     0.33     0.54
 HUB     13.07     0.00    -0.02   397.51    -0.14   397.51     0.33     0.49

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.93    47.36     8.57   587.56   709.51    10.06   595.61   522.57     0.15
 MEAN    52.09    44.80     7.29   510.37   647.01    10.06   595.61   522.57     0.15
 HUB     46.53    38.84     7.69   419.18   577.79    10.06   595.61   522.57     0.15

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   494.85   287.12   403.04  1207.34      0.41     2.05     1.78     7.43
 MEAN    15.50   498.04   283.40   409.54  1203.25      0.41     2.13     1.86     5.75
 HUB     12.59   529.64   327.28   416.41  1199.30      0.44     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    575.38   495.52   288.26     0.41  5153.41      0.92     0.91
 MEAN   497.04   461.92   213.65     0.38  4394.15      0.92     0.91     0.91     1.54
 HUB    403.79   423.38    76.51     0.35  4122.30      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.52     1.15    11.17   634.82     1.04   615.17   531.83     0.10
 MEAN    12.26     1.13    10.92   630.91     1.04   611.00   530.51     0.11
 HUB     12.17     1.12    10.67   629.51     1.03   607.00   530.06     0.12

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.47    35.57    31.50     4.07     0.93     0.44     1.40
 MEAN    34.68    27.55    23.50     4.05     0.93     0.42     1.64
 HUB     38.17    10.41     6.50     3.91     0.93     0.41     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   552.5645   288.5931   471.2128  1199.4927     0.4607    -0.1926     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.2900    10.6464   607.2479   530.7774     0.1192    31.4853    33.0000     1.5147
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   476.2717   108.7571   463.6881  1205.6948     0.3950     0.0818     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.2663    11.0312   613.5446   530.6893   410.5396     0.0369     0.3534

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   461.6923     0.0000   461.6923  1206.7394     0.3826     0.2775     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.1025   614.6416   530.6838     0.0000     0.0600     0.0374     0.1326

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8832    12.2656     1.1293   631.7411    23.4547   249.0926     1.9310

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 146188.078       0.442     529.930  596961.438   0.247301E-03

Melt Ratio at Stator LE, Throat, TE
0.14334E+00 0.15473E+00 0.18498E+00
 trTOT =     1.3099   Tt4 =   631.7411   T1  =   482.2704

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    930538.75   3373.1919    175.9648      2.3738      0.8684      5.6575      1.3099     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 69.9%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.995   EfDer =  0.999    SH =  0.121864E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     63.035    3644.727       5.167     482.270       1.000       1.000       0.980
 W Kg/sec =  28.652  Wdry =  63.027  WH2O = 0.008  lbm/sec   H2O =   0.053g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    172.914    3779.859       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 140707.375   49457.773       1.643     831.557     506.171     619.754       1.224

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   406.10    -0.14   406.10      0.39     0.73   680.47
 MEAN    17.06     0.00    -0.02   406.10    -0.14   406.10      0.39     0.64
 HUB     12.51     0.00    -0.02   406.10    -0.14   406.10      0.39     0.54

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.25    50.47     7.78   656.16   771.79     4.67   469.01   465.19     2.71
 MEAN    53.20    47.20     6.00   542.62   677.87     4.67   469.01   465.19     2.71
 HUB     44.43    38.62     5.81   397.90   568.64     4.67   469.01   465.19     2.71

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   641.89   370.98   523.83  1076.01      0.60     7.29     6.52    16.04
 MEAN    18.04   675.62   409.09   537.69  1070.51      0.63     7.43     6.80    12.53
 HUB     15.00   776.63   533.18   564.69  1060.91      0.73     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    656.16   596.43   285.19     0.55  7656.14      0.92     0.91
 MEAN   573.66   562.31   164.57     0.53  7380.67      0.92     0.91     0.91     1.34
 HUB    477.09   567.47    56.08     0.53  7999.43      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.70     1.30     5.28   521.43     1.08   488.30   487.12     1.47
 MEAN     6.64     1.28     5.09   520.02     1.08   483.32   486.53     1.74
 HUB      6.77     1.31     4.76   523.19     1.08   474.69   488.49     2.35

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.31    28.56    24.20     4.36     0.93     0.36     1.80
 MEAN    37.26    17.02    12.70     4.32     0.92     0.31     2.22
 HUB     43.36    -5.67    -9.30     3.63     0.92     0.17     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   713.7106   408.2913   585.3896  1067.4764     0.6686    -0.0723     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6863     4.9718   480.5901   487.3879     1.9337    34.8946    35.4000     0.5054

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   556.5621   136.1521   539.6517  1085.1464     0.5129     0.3214     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6593     5.5775   496.6411   486.9215   554.9116     0.0263     0.4307

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   552.2631     0.0000   552.2631  1085.5403     0.5087     0.3528     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5767   497.0268   486.8884     0.0000     0.0600     0.0381     0.3209
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8798     6.6397     1.2850   521.5445    39.2756   217.0037     1.6822

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 244275.156       0.567     870.144  672722.125   0.141389E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.990   EfDer =  1.000    SH =  0.162418E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     63.035    3644.727       6.640     521.544       1.000       1.000       0.980
 W Kg/sec =  28.652  Wdry =  63.024  WH2O = 0.010  lbm/sec   H2O =   0.081g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    139.939    3634.774       1.381       0.249      53.354      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 121765.500   49456.988       1.441     590.487     409.663     468.502       1.144

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   494.91    -0.17   494.91     0.45     0.75   651.81
 MEAN    18.08     0.00    -0.02   494.91    -0.17   494.91     0.45     0.70
 HUB     15.21     0.00    -0.02   494.91    -0.17   494.91     0.45     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.87    46.36     6.51   653.62   819.98     5.78   501.86   486.88     1.14
 MEAN    49.29    42.30     6.99   575.00   758.79     5.78   501.86   486.88     1.14
 HUB     44.36    37.84     6.52   483.77   692.20     5.78   501.86   486.88     1.14

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   576.37   301.05   491.50  1117.03      0.52     2.33     2.04     9.02
 MEAN    18.01   590.64   313.65   500.48  1112.89      0.53     2.40     2.13     7.35
 HUB     15.22   642.58   390.76   510.11  1109.03      0.58     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    649.48   602.48   348.43     0.54  6150.96      0.92     0.91
 MEAN   572.83   563.61   259.18     0.51  5651.86      0.92     0.91     0.91     1.46
 HUB    484.19   518.59    93.43     0.47  5951.14      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.07     1.21     6.74   552.99     1.06   526.29   501.38     0.56
 MEAN     7.94     1.20     6.57   550.44     1.06   522.40   500.31     0.62
 HUB      8.02     1.21     6.40   551.97     1.06   518.78   501.06     0.69

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.49    35.33    31.50     3.83     0.93     0.40     1.40
 MEAN    32.07    27.38    23.50     3.88     0.93     0.38     1.63
 HUB     37.45    10.38     6.50     3.88     0.93     0.39     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   656.1992   314.5280  575.9075  1107.3002     0.5926    -0.1742     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.9939     6.3214   517.1979   500.9830     0.7247    28.6409    30.6000     1.9591

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   543.8175   115.2932   531.4555  1118.8447     0.4861     0.1570     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.9736     6.7976   528.0350   500.7610   491.5697     0.0241     0.3064

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   567.9688     0.0000   567.9688  1116.5325     0.5087     0.2149     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6808	525.8796	500.7564	0.0000	0.0600	0.0379	0.0757

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8805	7.9538	1.1979	551.8012	30.2584	245.3979	1.9023

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
188283.281	0.446	670.693	604122.313	0.170870E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 7.098 EfDer = 1.000 SH = 0.183868E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.035	3644.727	7.954	551.801	1.000	1.000	0.980

W Kg/sec = 28.652 Wdry = 63.023 WH2O = 0.012 lbm/sec H2O = 0.106g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
120.159	3533.717	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
105745.320	49456.570	1.551	545.479	351.781	424.468	1.207

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	465.26	-0.16	465.26	0.41	0.70	618.89
MEAN	17.74	0.00	-0.02	465.26	-0.16	465.26	0.41	0.65	
HUB	15.05	0.00	-0.02	465.26	-0.16	465.26	0.41	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.92	46.36	7.56	638.35	790.04	7.08	534.41	500.68	0.49
MEAN	50.50	43.40	7.10	564.19	731.41	7.08	534.41	500.68	0.49
HUB	45.82	38.84	6.98	478.68	667.65	7.08	534.41	500.68	0.49

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	553.61	298.93	465.97	1149.55	0.48	2.26	1.98	8.75
MEAN	17.51	566.27	310.78	473.37	1145.83	0.49	2.34	2.07	6.78
HUB	14.85	615.25	383.21	481.34	1142.33	0.54	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	630.08	571.66	331.16	0.50	5924.94	0.92	0.91		
MEAN	556.82	533.49	246.04	0.47	5443.56	0.92	0.91	0.91	1.49
HUB	472.32	489.52	89.12	0.43	5693.02	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.50	1.19	8.12	582.08	1.05	557.46	513.10	0.28
MEAN	9.37	1.18	7.94	579.62	1.05	553.86	512.16	0.30
HUB	9.43	1.19	7.76	580.90	1.05	550.48	512.71	0.33

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.68	35.40	31.50	3.90	0.93	0.41	1.40
MEAN	33.29	27.46	23.50	3.96	0.93	0.40	1.62
HUB	38.52	10.49	6.50	3.99	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	624.5403	312.8213	540.5492	1141.3019	0.5472	-0.1608	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4185	7.7030	549.5353	512.6795	0.3390	30.0584	31.5000	1.4416

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	521.7470	113.8156	509.1816	1151.0911	0.4533	0.1590	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4007	8.1796	558.9996	512.5361	451.3937	0.0219	0.3280

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   532.1888     0.0000   532.1888  1150.1512     0.4627     0.2390     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.1130   558.1181   512.5040     0.0000     0.0600     0.0373     0.1143

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8821     9.3777     1.1790   580.8654    29.0662   235.6037     1.8264

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 180948.500       0.456     644.565  579694.813   0.195423E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 7.336   EfDer =  0.999    SH =  0.214678E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     63.035    3644.727       9.378     580.865       1.000       1.000       0.980
 W Kg/sec =  28.652  Wdry =  63.021  WH2O = 0.014  lbm/sec   H2O =   0.140g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    104.563    3444.176       1.381       0.249      53.355      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  93064.078   49455.973       1.677     513.330     306.145     395.845       1.293

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   435.11    -0.15   435.11     0.38     0.65   578.86
 MEAN    16.97     0.00    -0.02   435.11    -0.15   435.11     0.38     0.60
 HUB     14.32     0.00    -0.02   435.11    -0.15   435.11     0.38     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     54.62    46.36     8.26   612.59   751.51     8.52   565.66   512.47     0.26
 MEAN    51.14    43.80     7.34   539.77   693.42     8.52   565.66   512.47     0.26
 HUB     46.32    37.84     8.48   455.47   630.00     8.52   565.66   512.47     0.26

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   524.77   289.11   437.95  1179.15     0.45     2.16     1.89     8.34
 MEAN    16.57   534.15   296.22   444.49  1175.53     0.45     2.24     1.97     6.35
 HUB     13.89   576.58   358.61   451.49  1172.07     0.49     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    600.50   537.37   311.40     0.46  5461.22     0.92     0.91
 MEAN   527.15   500.90   230.94     0.43  4911.98     0.92     0.91     0.91     1.51
 HUB    441.79   459.09    83.18     0.39  4983.25     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.96     1.17     9.58   608.76     1.05   586.65   522.93     0.17
 MEAN    10.79     1.15     9.38   605.96     1.04   583.04   521.93     0.18
 HUB     10.81     1.15     9.18   606.32     1.04   579.62   522.09     0.19

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.43    35.41    31.50     3.91     0.93     0.42     1.40
 MEAN    33.68    27.45    23.50     3.95     0.93     0.41     1.62
 HUB     38.46    10.44     6.50     3.94     0.93     0.42     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   574.7988   297.8811   491.5898  1172.8910     0.4901    -0.1128     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.8409     9.2186   580.4873   522.3145     0.1903    31.2140    32.4000     1.1860

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   486.6958   109.1516   474.2981  1180.4478     0.4123     0.1780     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.8269     9.6461   587.9949   522.2230   432.2457     0.0195     0.3471

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   482.7048     0.0000   482.7048  1180.7279     0.4088     0.2607     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6415   588.3066   522.1727     0.0000     0.0600     0.0371     0.1749

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8822    10.8010     1.1518   607.0092    26.1470   239.1834     1.8541

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 162868.422       0.452     580.161  575240.938   0.226708E-03

Melt Ratio at Stator LE, Throat, TE
0.41421E-01 0.50140E-01 0.71233E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.496   EfDer =  0.999    SH =  0.242102E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     63.035    3644.727      10.801     607.008       1.000       1.000       0.980
 W Kg/sec =  28.652  Wdry =  63.019  WH2O = 0.015  lbm/sec   H2O =   0.177g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     92.805    3369.190       1.380       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  83107.953   49455.438       1.876     509.668     271.743     384.739       1.416

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1       CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   391.35    -0.13   391.35     0.33     0.59   538.62
 MEAN    15.91     0.00    -0.02   391.35    -0.13   391.35     0.33     0.54
 HUB     13.07     0.00    -0.02   391.35    -0.13   391.35     0.33     0.48

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.12    47.36     8.76   582.69   702.03    10.03   594.72   522.15     0.15
 MEAN    52.30    44.80     7.50   506.13   639.89    10.03   594.72   522.15     0.15
 HUB     46.74    38.84     7.90   415.71   571.03    10.03   594.72   522.15     0.15

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   489.79   286.64   397.16  1206.22      0.41     2.05     1.78     7.43
 MEAN    15.50   492.57   282.50   403.51  1202.16      0.41     2.13     1.86     5.75
 HUB     12.59   523.46   325.16   410.21  1198.24      0.44     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    570.60   488.23   283.96     0.40  5144.77      0.92     0.91
 MEAN   492.92   455.07   210.42     0.38  4380.26      0.92     0.91     0.91     1.55
 HUB    400.44   417.06    75.28     0.35  4095.58      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.43     1.15    11.12   633.27     1.04   614.02   531.35     0.11
 MEAN    12.18     1.13    10.87   629.37     1.04   609.90   530.03     0.12
 HUB     12.09     1.12    10.62   627.91     1.03   605.93   529.55     0.12

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.82    35.56     31.50     4.06     0.93     0.45     1.40
 MEAN    35.00    27.54     23.50     4.04     0.93     0.42     1.64
 HUB     38.40    10.40      6.50     3.90     0.93     0.41     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   545.9414   287.6828   463.9942  1198.5315     0.4555    -0.1906     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.2068    10.6075   606.2706   530.2855     0.1239    31.7995    33.0000     1.2005
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     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    15.2185   468.9604   107.0875   456.5700  1204.7094     0.3893     0.0899     2.1315

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500    12.1847    10.9910   612.5381   530.1994   410.5396     0.0362     0.3577

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
    14.7013   454.7002     0.0000   454.7002  1205.7153     0.3771     0.2823     0.5109

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500    11.0590   613.5947   530.1933     0.0000     0.0600     0.0371     0.1397

     STAGE EXIT CONDITIONS, STAGE            5
     Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
     0.8835    12.1835     1.1280   630.1803    23.1765   247.3121     1.9171

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 144452.453       0.444     514.561  586591.063   0.251739E-03

Melt Ratio at Stator LE, Throat, TE
0.14455E+00 0.15596E+00 0.18618E+00
 trTOT =     1.3067   Tt4 =   630.1803   T1  =   482.2704

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    920827.81   3280.1248    172.9144      2.3578      0.8699      5.9955      1.3067     37.3740
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50µm, ISA +36R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.966   EfDer =  0.985    SH =  0.952686E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     73.936    3973.478       5.167     482.273       1.000       1.000       0.980
  W Kg/sec =  33.607  Wdry =  73.929  WH2O = 0.007  lbm/sec   H2O =   0.040g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     202.819    4120.799       1.381       0.248      53.351      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 171028.000   58011.832       1.401     831.557     593.699     619.754       1.044

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   493.61    -0.17   493.61     0.47     0.83   741.85
 MEAN    17.06     0.00    -0.02   493.61    -0.17   493.61     0.47     0.74
 HUB     12.51     0.00    -0.02   493.61    -0.17   493.61     0.47     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.40     50.47     4.93   715.35   869.26     4.45   462.68   465.19     2.69
 MEAN    50.17     47.20     2.97   591.56   770.58     4.45   462.68   465.19     2.69
 HUB     41.32     38.62     2.70   433.79   657.25     4.45   462.68   465.19     2.69

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   741.43   362.64   646.69  1066.63     0.70     7.29     6.52    16.04
 MEAN    18.04   787.14   421.45   664.80  1061.11     0.74     7.43     6.80    12.53
 HUB     15.00   928.97   591.97   715.93  1047.11     0.89     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    715.35   736.62   352.70     0.69  7484.86     0.92     0.90
 MEAN   625.40   695.38   203.95     0.66  7604.25     0.92     0.90     0.90     1.21
 HUB    520.13   719.53    71.84     0.69  8881.64     0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.78     1.31     4.93   524.02     1.09   479.81   488.37     1.42
 MEAN     6.81     1.32     4.75   524.68     1.09   474.86   488.85     1.69
 HUB      7.12     1.38     4.29   531.81     1.10   462.41   493.05     2.68

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.28    28.61    24.20     4.41     0.93     0.27     1.80
 MEAN    32.37    17.05    12.70     4.35     0.91     0.22     2.22
 HUB     39.59    -5.73    -9.30     3.57     0.91     0.07     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.985       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   850.0022   420.6354   738.6268  1054.2488     0.8063    -0.1058     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.8829     4.5077   468.7310   490.1416     2.1166    29.6608    35.4000     5.7392

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   691.6396   169.1962   670.6251  1076.0936     0.6427     0.2316     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.8127     5.1766   488.3661   489.3766   554.9116     0.0412     0.3615

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   693.1349     0.0000   693.1349  1075.8868     0.6442     0.2574     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.1191	488.2047	489.2301	0.0000	0.0600	0.0712	0.2061

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8263	6.7453	1.3054	526.8334	44.5611	237.2959	1.8395

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
277091.406	0.541	1157.744	817685.188	0.980437E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.613 EfDer = 0.990 SH = 0.100582E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.936	3973.478	6.745	526.833	1.000	1.000	0.980

W Kg/sec = 33.607 Wdry = 73.929 WH2O = 0.007 lbm/sec H2O = 0.048g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
162.387	3942.686	1.381	0.248	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
149444.609	58011.707	1.242	590.487	475.357	468.502	0.986

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	607.41	-0.21	607.41	0.56	0.86	707.03
MEAN	18.08	0.00	-0.02	607.41	-0.21	607.41	0.56	0.80	
HUB	15.21	0.00	-0.02	607.41	-0.21	607.41	0.56	0.74	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.56	46.36	3.20	712.57	936.49	5.47	497.17	489.08	0.80
MEAN	45.91	42.30	3.61	626.87	873.02	5.47	497.17	489.08	0.80
HUB	40.98	37.84	3.14	527.41	804.57	5.47	497.17	489.08	0.80

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	660.20	282.73	596.60	1114.62	0.59	2.33	2.04	9.02
MEAN	18.01	680.29	308.24	606.45	1110.99	0.61	2.40	2.13	7.35
HUB	15.22	742.66	412.88	617.31	1107.74	0.67	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	708.07	732.69	425.34	0.66	5777.63	0.92	0.91		
MEAN	624.50	683.96	316.26	0.62	5555.09	0.92	0.91	0.91	1.37
HUB	527.86	627.93	114.98	0.57	6288.48	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.20	1.22	6.49	559.05	1.06	524.00	503.46	0.35
MEAN	8.14	1.21	6.34	557.81	1.06	520.60	502.97	0.39
HUB	8.34	1.24	6.19	561.90	1.07	517.55	504.76	0.42

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.36	35.49	31.50	3.99	0.93	0.33	1.40
MEAN	26.94	27.54	23.50	4.04	0.92	0.32	1.63
HUB	33.78	10.55	6.50	4.05	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.990	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	779.0070	309.1008	715.0585	1100.4507	0.7079	-0.2338	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2077	5.8977	510.8023	503.8321	0.5164	23.3775	30.6000	7.2225

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	672.4756	142.5696	657.1890	1113.7714	0.6038	0.0265	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.1494	6.3888	523.2289	503.5290	491.5697	0.0409	0.2243

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	715.1625	0.0000	715.1625	1108.6698	0.6451	0.1029	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.1354	518.4723	503.4525	0.0000	0.0600	0.0725	-0.1077

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8274	8.0898	1.1993	559.5820	32.7493	279.3593	2.1656

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
203736.063	0.406	851.250	740105.875	0.101347E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.987 EfDer = 0.992 SH = 0.102286E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.936	3973.478	8.090	559.582	1.000	1.000	0.980

W Kg/sec = 33.607 Wdry = 73.929 WH2O = 0.008 lbm/sec H2O = 0.057g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
139.544	3825.578	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
128651.164	58011.668	1.335	545.479	408.510	424.468	1.039

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	566.04	-0.19	566.04	0.50	0.80	670.01
MEAN	17.74	0.00	-0.02	566.04	-0.19	566.04	0.50	0.74	
HUB	15.05	0.00	-0.02	566.04	-0.19	566.04	0.50	0.68	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.88	46.36	4.52	695.93	897.21	6.82	533.83	503.30	0.27
MEAN	47.39	43.40	3.99	615.08	836.04	6.82	533.83	503.30	0.27
HUB	42.69	38.84	3.85	521.86	770.03	6.82	533.83	503.30	0.27

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	630.09	285.81	561.54	1151.42	0.55	2.26	1.98	8.75
MEAN	17.51	648.23	309.05	569.82	1148.05	0.56	2.34	2.07	6.78
HUB	14.85	707.20	406.14	578.94	1144.98	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	686.91	690.09	401.11	0.60	5665.77	0.92	0.91		
MEAN	607.04	643.03	297.99	0.56	5413.84	0.92	0.91	0.91	1.40
HUB	514.93	589.07	108.78	0.51	6034.18	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.70	1.20	7.93	591.16	1.06	559.25	515.77	0.14
MEAN	9.62	1.19	7.77	589.76	1.05	555.98	515.25	0.15
HUB	9.81	1.21	7.61	593.21	1.06	553.02	516.59	0.16

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.97	35.54	31.50	4.04	0.93	0.34	1.40
MEAN	28.47	27.61	23.50	4.11	0.92	0.34	1.62
HUB	35.05	10.64	6.50	4.14	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	730.5021	311.0770	660.9572	1140.2396	0.6407	-0.2031	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.6886	7.3749	548.5002	515.8890	0.1811	25.2038	31.5000	6.2962

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	637.5698	139.0815	622.2151	1150.8209	0.5540	0.0406	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.6416	7.8469	558.7129	515.7124	451.3937	0.0342	0.2570

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	654.6458	0.0000	654.6458	1148.9648	0.5698	0.1488	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.7193	556.9446	515.6229	0.0000	0.0600	0.0584	-0.0251

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8480	9.5947	1.1860	591.3751	31.7943	264.9267	2.0537

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
197882.234	0.419	826.792	700055.375	0.103079E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 4.569 EfDer = 0.995 SH = 0.104302E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.936	3973.478	9.595	591.375	1.000	1.000	0.980

W Kg/sec = 33.607 Wdry = 73.928 WH2O = 0.008 lbm/sec H2O = 0.066g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
120.953	3721.323	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
111902.813	58011.621	1.450	513.330	354.110	395.845	1.118

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	523.19	-0.18	523.19	0.45	0.73	625.44
MEAN	16.97	0.00	-0.02	523.19	-0.18	523.19	0.45	0.68	
HUB	14.32	0.00	-0.02	523.19	-0.18	523.19	0.45	0.62	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.93	46.36	5.57	667.84	848.52	8.36	569.39	515.56	0.11
MEAN	48.37	43.80	4.57	588.46	787.54	8.36	569.39	515.56	0.11
HUB	43.51	37.84	5.67	496.55	721.43	8.36	569.39	515.56	0.11

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	593.26	281.83	522.04	1185.30	0.50	2.16	1.89	8.34
MEAN	16.57	607.81	298.02	529.74	1181.76	0.51	2.24	1.97	6.35
HUB	13.89	659.49	381.31	538.08	1178.47	0.56	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	654.67	641.51	372.84	0.54	5324.41	0.92	0.91		
MEAN	574.70	597.64	276.68	0.51	4942.43	0.92	0.91	0.91	1.42
HUB	481.64	547.35	100.33	0.46	5298.96	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.28	1.18	9.53	621.03	1.05	592.76	526.23	0.07
MEAN	11.15	1.16	9.33	618.91	1.05	589.23	525.50	0.07
HUB	11.27	1.17	9.14	620.89	1.05	585.96	526.21	0.08

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	28.36	35.53	31.50	4.03	0.93	0.36	1.40
MEAN	29.36	27.58	23.50	4.08	0.92	0.36	1.62
HUB	35.32	10.56	6.50	4.06	0.92	0.38	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	662.0292	299.6975	590.3084	1177.5266	0.5622	-0.1357	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
11.2171	9.0753	585.0828	525.9611	0.0779	26.9167	32.4000	5.4833

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   585.1414   131.2301   570.2360  1185.2533     0.4937     0.0808     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    11.1826    9.4867   592.7823   525.8575   432.2457     0.0282     0.2864

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   580.4775     0.0000   580.4775  1185.6589     0.4896     0.1899     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.4820   593.2222   525.7841     0.0000     0.0600     0.0467     0.0783

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8636    11.1472     1.1618   620.2766    28.9032   265.2833     2.0565

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 179989.094       0.420     752.031  685951.250   0.105307E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.157   EfDer =  0.997    SH =  0.107318E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     73.936    3973.478      11.147     620.276       1.000       1.000       0.980
 W Kg/sec =  33.607  Wdry =  73.928  WH2O = 0.008  lbm/sec   H2O =   0.078g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    106.621    3633.593       1.380       0.249      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  98503.867   58011.551       1.633     509.668     312.178     384.739       1.232

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   463.85    -0.16   463.85     0.39     0.66   580.89
 MEAN    15.91     0.00    -0.02   463.85    -0.16   463.85     0.39     0.60
 HUB     13.07     0.00    -0.02   463.85    -0.16   463.85     0.39     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.87    47.36     6.51   635.25   786.70    10.06   603.00   525.75     0.06
 MEAN    49.96    44.80     5.16   551.79   720.97    10.06   603.00   525.75     0.06
 HUB     44.35    38.84     5.51   453.20   648.61    10.06   603.00   525.75     0.06

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   547.97   287.08   466.75  1216.81      0.45     2.05     1.78     7.43
 MEAN    15.50   555.66   288.74   474.75  1212.48      0.46     2.13     1.86     5.75
 HUB     12.59   594.90   347.03   483.20  1208.35      0.49     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    622.07   574.52   334.99     0.47  5153.16      0.92     0.91
 MEAN   537.38   535.92   248.64     0.44  4477.34      0.92     0.91     0.91     1.47
 HUB    436.56   491.42    89.53     0.41  4371.17      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.95     1.16    11.29   648.96     1.05   624.86   535.38     0.04
 MEAN    12.70     1.14    11.02   645.20     1.04   620.42   534.16     0.04
 HUB     12.66     1.14    10.75   644.61     1.04   616.20   533.97     0.04

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.59    35.67    31.50     4.17     0.93     0.40     1.40
 MEAN    31.31    27.64    23.50     4.14     0.92     0.38     1.64
 HUB     35.69    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   623.9005   294.0360   550.2677  1207.1301     0.5168    -0.2161     2.0437
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    Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
   12.7383    10.6418   615.0202   534.4568     0.0437    28.1179    33.0000     4.8821

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   557.5737   127.3224   542.8420  1213.2919     0.4596    -0.0137     2.1315

   BlockageTh  PtTh       PsTh       TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.6867    10.9973   621.3078   534.3389   410.5396     0.0495     0.3067

    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   538.9139     0.0000   538.9139  1214.8628     0.4436     0.2236     0.5109

   Blockage4   Ps4       Ts4        TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.1105   622.9525   534.3510     0.0000     0.0600     0.0447     0.0509

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
    0.8706    12.6951     1.1389   646.2566    25.9819   269.4713     2.0889

Del Enthalpy   Del_H/U^2    GHP       Reynolds#        SH
 161901.438       0.418     676.457  691022.563   0.108866E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3400   Tt4 =   646.2566   T1  =   482.2730

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
   1020600.19   4264.2739    202.8189      2.4569      0.8274      2.9658      1.3400     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 75.6%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.308   EfDer =  0.998    SH =  0.966183E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      65.275    3704.939       5.167     482.272       1.000       1.000       0.980
  W Kg/sec =  29.670  Wdry =  65.269  WH2O = 0.006  lbm/sec   H2O =   0.041g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     179.060    3842.304       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 146640.750   51215.969       1.586     831.557     524.152     619.754       1.182

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   423.23    -0.15   423.23     0.40     0.75   691.71
 MEAN    17.06     0.00    -0.02   423.23    -0.15   423.23     0.40     0.66
 HUB     12.51     0.00    -0.02   423.23    -0.15   423.23     0.40     0.56

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.61    50.47     7.14   667.00   790.07     4.63   467.87   465.10     2.24
 MEAN    52.51    47.20     5.31   551.58   695.36     4.63   467.87   465.10     2.24
 HUB     43.71    38.62     5.09   404.47   585.52     4.63   467.87   465.10     2.24

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   659.83   369.04   546.98  1074.44      0.61     7.29     6.52    16.04
 MEAN    18.04   695.98   411.10   561.59  1068.93      0.65     7.43     6.80    12.53
 HUB     15.00   803.65   543.76   591.75  1058.76      0.76     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    667.00   622.87   297.96     0.58  7616.30      0.92     0.91
 MEAN   583.14   587.35   172.03     0.55  7417.17      0.92     0.91     0.91     1.31
 HUB    484.98   594.66    58.79     0.56  8158.30      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.22   521.88     1.08   486.87   487.18     1.14
 MEAN     6.67     1.29     5.03   520.84     1.08   481.89   486.76     1.35
 HUB      6.84     1.32     4.69   524.69     1.09   472.76   489.00     1.87

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.01    28.58    24.20     4.38     0.93     0.34     1.80
 MEAN    36.21    17.03    12.70     4.33     0.92     0.29     2.22
 HUB     42.58    -5.67    -9.30     3.63     0.92     0.15     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   737.6886   410.3054   613.0530  1065.3956     0.6924    -0.0775     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7224     4.8968   478.7107   487.6383     1.5115    33.7937    35.4000     1.6063

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   581.4192   142.2329   563.7535  1083.6759     0.5365     0.3032     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6911     5.5136   495.2875   487.2287   554.9116     0.0278     0.4162

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   577.3548     0.0000   577.3548  1084.0660     0.5326     0.3351     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5087   495.6692   487.1718     0.0000     0.0600     0.0417     0.3003
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8741     6.6665     1.2902   522.4689    40.1975   221.3266     1.7157

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 249979.188       0.562     922.109  701089.438   0.100180E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.283   EfDer =  1.000    SH =  0.103573E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     65.275    3704.939       6.667     522.469       1.000       1.000       0.980
 W Kg/sec =  29.670  Wdry =  65.268  WH2O = 0.007  lbm/sec   H2O =   0.051g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    144.456    3691.552       1.381       0.248      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 126899.133   51215.832       1.396     590.487     422.872     468.502       1.108

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   515.77    -0.18   515.77     0.47     0.77   662.00
 MEAN    18.08     0.00    -0.02   515.77    -0.18   515.77     0.47     0.72
 HUB     15.21     0.00    -0.02   515.77    -0.18   515.77     0.47     0.65

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.19     46.36     5.83   664.42   841.25     5.73   501.08   487.11     0.74
 MEAN    48.58     42.30     6.28   584.50   779.66     5.73   501.08   487.11     0.74
 HUB     43.65     37.84     5.81   491.77   712.76     5.73   501.08   487.11     0.74

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

        R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   591.35   297.53   511.05  1116.69     0.53     2.33     2.04     9.02
 MEAN    18.01   606.93   312.49   520.30  1112.61     0.55     2.40     2.13     7.35
 HUB     15.22   661.02   394.75   530.21  1108.84     0.60     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    660.21   626.67   362.69     0.56  6079.14     0.92     0.91
 MEAN   582.29   586.09   269.80     0.53  5631.17     0.92     0.91     0.91     1.44
 HUB    492.19   539.09    97.43     0.49  6012.05     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.10     1.22     6.71   554.07     1.06   525.96   501.62     0.35
 MEAN     7.99     1.20     6.54   551.74     1.06   522.13   500.64     0.39
 HUB      8.09     1.21     6.38   553.72     1.06   518.59   501.55     0.43

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     30.21    35.36    31.50     3.86     0.93     0.38     1.40
 MEAN    30.99    27.41    23.50     3.91     0.93     0.37     1.63
 HUB     36.67    10.41     6.50     3.91     0.93     0.38     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   677.5884   313.3686   600.7713  1106.3223     0.6125    -0.1838     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.0443     6.2637   516.2738   501.3093     0.4630    27.5470    30.6000     3.0530

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   566.8654   120.1795   553.9794  1118.1309     0.5070     0.1326     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     8.0199     6.7439   527.3484   501.1343   491.5697     0.0261     0.2907

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   593.0331     0.0000   593.0331  1115.5181     0.5316     0.1964     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6134	524.9118	501.1094	0.0000	0.0600	0.0406	0.0465

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8766	7.9979	1.1997	553.1774	30.7095	251.8824	1.9526

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
191053.172	0.438	704.746	630191.125	0.104638E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.476 EfDer = 1.000 SH = 0.106159E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.275	3704.939	7.998	553.177	1.000	1.000	0.980

W Kg/sec = 29.670 Wdry = 65.268 WH2O = 0.007 lbm/sec H2O = 0.061g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
123.897	3587.624	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
109888.992	51215.781	1.504	545.479	362.707	424.468	1.170

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	483.49	-0.17	483.49	0.43	0.72	628.33
MEAN	17.74	0.00	-0.02	483.49	-0.17	483.49	0.43	0.67	
HUB	15.05	0.00	-0.02	483.49	-0.17	483.49	0.43	0.61	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.32	46.36	6.96	648.90	809.35	7.06	534.39	501.03	0.28
MEAN	49.88	43.40	6.48	573.52	750.25	7.06	534.39	501.03	0.28
HUB	45.19	38.84	6.35	486.59	686.07	7.06	534.39	501.03	0.28

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	567.07	296.74	483.24	1150.02	0.49	2.26	1.98	8.75
MEAN	17.51	580.89	310.60	490.87	1146.33	0.51	2.34	2.07	6.78
HUB	14.85	631.86	387.48	499.10	1142.89	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	640.49	593.03	343.75	0.52	5881.71	0.92	0.91		
MEAN	566.02	553.35	255.42	0.48	5440.49	0.92	0.91	0.91	1.47
HUB	480.13	507.63	92.65	0.44	5756.55	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.56	1.20	8.12	583.74	1.06	557.90	513.50	0.15
MEAN	9.44	1.18	7.94	581.45	1.05	554.33	512.62	0.17
HUB	9.53	1.19	7.76	583.09	1.05	551.01	513.29	0.18

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.55	35.43	31.50	3.93	0.93	0.40	1.40
MEAN	32.32	27.49	23.50	3.99	0.93	0.39	1.62
HUB	37.82	10.52	6.50	4.02	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	642.9495	312.6380	561.8198	1141.3271	0.5633	-0.1678	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4939	7.6745	549.5468	513.1376	0.1896	29.0948	31.5000	2.4052

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	542.1099	118.2576	529.0541	1151.2585	0.4709	0.1373	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4731	8.1539	559.1474	513.0294	451.3937	0.0233	0.3144

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	553.2624	0.0000	553.2624	1150.2186	0.4810	0.2237	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.0816	558.1689	512.9846	0.0000	0.0600	0.0386	0.0913

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8800	9.4490	1.1814	582.7596	29.5835	240.9783	1.8680

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
184124.313	0.449	679.187	603132.563	0.107319E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.800 EfDer = 1.000 SH = 0.109334E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.275	3704.939	9.449	582.759	1.000	1.000	0.980

W Kg/sec = 29.670 Wdry = 65.268 WH2O = 0.007 lbm/sec H2O = 0.071g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
107.637	3495.380	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
96426.422	51215.715	1.629	513.330	315.126	395.845	1.256

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	450.83	-0.16	450.83	0.39	0.66	587.47
MEAN	16.97	0.00	-0.02	450.83	-0.16	450.83	0.39	0.61	
HUB	14.32	0.00	-0.02	450.83	-0.16	450.83	0.39	0.56	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.10	46.36	7.74	622.71	768.90	8.52	566.43	512.94	0.13
MEAN	50.60	43.80	6.80	548.69	710.27	8.52	566.43	512.94	0.13
HUB	45.77	37.84	7.93	462.99	646.33	8.52	566.43	512.94	0.13

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	536.81	288.10	452.95	1180.41	0.45	2.16	1.89	8.34
MEAN	16.57	547.20	296.77	459.73	1176.78	0.47	2.24	1.97	6.35
HUB	13.89	591.41	362.86	467.01	1173.33	0.50	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	610.42	555.92	322.32	0.47	5442.38	0.92	0.91		
MEAN	535.86	518.19	239.09	0.44	4921.33	0.92	0.91	0.91	1.49
HUB	449.09	474.90	86.23	0.40	5042.38	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.06	1.17	9.61	611.03	1.05	587.88	523.47	0.08
MEAN	10.90	1.15	9.41	608.32	1.04	584.27	522.51	0.09
HUB	10.94	1.16	9.21	608.95	1.04	580.85	522.75	0.09

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.46	35.44	31.50	3.94	0.93	0.41	1.40
MEAN	32.84	27.48	23.50	3.98	0.93	0.40	1.62
HUB	37.85	10.46	6.50	3.96	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	590.0690	298.4431	509.0316	1173.9005	0.5027	-0.1166	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.9491	9.2341	581.4714	522.8937	0.0920	30.3829	32.4000	2.0171

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	503.9678	113.0252	491.1301	1181.5094	0.4265	0.1602	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.9329	9.6630	589.0360	522.8282	432.2457	0.0205	0.3353

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	499.8349	0.0000	499.8349	1181.8126	0.4229	0.2476	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.6588	589.3713	522.7728	0.0000	0.0600	0.0380	0.1575

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8808	10.9057	1.1542	609.4313	26.6734	243.8733	1.8905

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
166095.219	0.446	612.683	597163.188	0.110937E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.045 EfDer = 1.000 SH = 0.113783E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.275	3704.939	10.906	609.431	1.000	1.000	0.980

W Kg/sec = 29.670 Wdry = 65.267 WH2O = 0.007 lbm/sec H2O = 0.083g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
95.370	3418.037	1.380	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
85863.016	51215.629	1.825	509.668	279.233	384.739	1.378

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	404.32	-0.14	404.32	0.34	0.60	546.43
MEAN	15.91	0.00	-0.02	404.32	-0.14	404.32	0.34	0.55	
HUB	13.07	0.00	-0.02	404.32	-0.14	404.32	0.34	0.49	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.69	47.36	8.33	592.32	717.27	10.08	596.31	522.75	0.07
MEAN	51.84	44.80	7.04	514.49	654.47	10.08	596.31	522.75	0.07
HUB	46.27	38.84	7.43	422.58	584.95	10.08	596.31	522.75	0.07

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	500.14	286.95	409.64	1208.27	0.41	2.05	1.78	7.43
MEAN	15.50	503.82	283.80	416.29	1204.15	0.42	2.13	1.86	5.75
HUB	12.59	536.27	329.23	423.31	1200.18	0.45	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	580.03	503.69	293.08	0.42	5150.40	0.92	0.91		
MEAN	501.06	469.57	217.26	0.39	4400.43	0.92	0.91	0.91	1.53
HUB	407.06	430.40	77.83	0.36	4146.78	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.58	1.15	11.20	636.17	1.04	616.09	532.05	0.05
MEAN	12.32	1.13	10.94	632.27	1.04	611.90	530.73	0.05
HUB	12.24	1.12	10.69	630.96	1.04	607.87	530.30	0.06

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	35.01	35.58	31.50	4.08	0.93	0.44	1.40
MEAN	34.28	27.56	23.50	4.06	0.93	0.41	1.64
HUB	37.87	10.42	6.50	3.92	0.93	0.40	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	559.6825	289.0034	479.2928	1200.2465	0.4663	-0.1950	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.3524	10.6632	607.9912	530.9885	0.0553	31.0891	33.0000	1.9109

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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   484.5247   110.6416   471.7231  1206.4475     0.4016     0.0714     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500    12.3268    11.0466   614.2899   530.9190   410.5396     0.0378     0.3478

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   469.5818     0.0000   469.5818  1207.5394     0.3889     0.2713     0.5109

Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500    11.1215   615.4358   530.9164     0.0000     0.0600     0.0379     0.1235

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.8825    12.3267     1.1303   633.1313    23.7019   251.3382     1.9484

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 147674.281       0.439     544.733  607683.250   0.116062E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.18508E-02
 trTOT =     1.3128   Tt4 =   633.1313   T1  =   482.2723

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    938926.13   3463.4583    179.0596      2.3856      0.8662      5.3085      1.3128     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 72.7%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.650   EfDer =  0.999    SH =  0.968042E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      64.161    3675.098       5.167     482.272       1.000       1.000       0.980
  W Kg/sec =  29.164  Wdry =  64.155  WH2O = 0.006  lbm/sec   H2O =   0.042g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     176.004    3811.357       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 143673.188   50341.980       1.614     831.557     515.208     619.754       1.203

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   414.66    -0.14   414.66     0.39     0.74   686.14
 MEAN    17.06     0.00    -0.02   414.66    -0.14   414.66     0.39     0.65
 HUB     12.51     0.00    -0.02   414.66    -0.14   414.66     0.39     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.93    50.47     7.46   661.63   780.95      4.65   468.45   465.09     2.20
 MEAN    52.85    47.20     5.65   547.14   686.63      4.65   468.45   465.09     2.20
 HUB     44.07    38.62     5.45   401.21   577.09      4.65   468.45   465.09     2.20

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   650.80   370.11   535.32  1075.26      0.61     7.29     6.52    16.04
 MEAN    18.04   685.74   410.15   549.56  1069.75      0.64     7.43     6.80    12.53
 HUB     15.00   790.03   538.48   578.09  1059.87      0.75     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    661.63   609.55   291.52     0.57  7638.22      0.92     0.91
 MEAN   578.44   574.75   168.29     0.54  7399.91      0.92     0.91     0.91     1.33
 HUB    481.07   580.93    57.41     0.55  8078.95      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.25   521.67     1.08   487.61   487.06     1.11
 MEAN     6.65     1.29     5.06   520.44     1.08   482.63   486.54     1.32
 HUB      6.80     1.32     4.72   523.94     1.09   473.75   488.59     1.80

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.66    28.57    24.20     4.37     0.93     0.35     1.80
 MEAN    36.73    17.03    12.70     4.33     0.92     0.30     2.22
 HUB     42.97    -5.67    -9.30     3.63     0.92     0.16     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   725.5797   409.3532   599.0791  1066.4757     0.6804    -0.0748     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7049     4.9356   479.6833   487.3859     1.4651    34.3450    35.4000     1.0550

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   568.8643   139.1616   551.5801  1084.4495     0.5246     0.3124     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6759     5.5471   495.9965   487.0002   554.9116     0.0270     0.4235

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   564.6562     0.0000   564.6562  1084.8446     0.5205     0.3441     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5444   496.3828   486.9492     0.0000     0.0600     0.0398     0.3108
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8773     6.6540     1.2877   522.0164    39.7451   219.1623     1.6989

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 247168.000       0.565     896.181  686901.625   0.100458E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.639   EfDer =  1.000    SH =  0.103965E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.161    3675.098       6.654     522.016       1.000       1.000       0.980
 W Kg/sec =  29.164  Wdry =  64.154  WH2O = 0.007  lbm/sec   H2O =   0.052g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    142.197    3663.406       1.381       0.248      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 124309.094   50341.840       1.419     590.487     416.259     468.502       1.126

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   505.25    -0.17   505.25     0.46     0.76   656.95
 MEAN    18.08     0.00    -0.02   505.25    -0.17   505.25     0.46     0.71
 HUB     15.21     0.00    -0.02   505.25    -0.17   505.25     0.46     0.64

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.53    46.36     6.17   659.06   830.58     5.75   501.49   486.90     0.74
 MEAN    48.94    42.30     6.64   579.79   769.18     5.75   501.49   486.90     0.74
 HUB     44.00    37.84     6.16   487.80   702.42     5.75   501.49   486.90     0.74

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   583.79   299.42   501.16  1116.90      0.52     2.33     2.04     9.02
 MEAN    18.01   598.72   313.17   510.29  1112.79      0.54     2.40     2.13     7.35
 HUB     15.22   651.74   392.81   520.06  1108.97      0.59     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    654.90   614.43   355.48     0.55  6117.68      0.92     0.91
 MEAN   577.60   574.73   264.43     0.52  5643.29      0.92     0.91     0.91     1.45
 HUB    488.22   528.74    95.41     0.48  5982.46      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.09     1.22     6.73   553.56     1.06   526.16   501.42     0.35
 MEAN     7.97     1.20     6.56   551.12     1.06   522.30   500.38     0.39
 HUB      8.05     1.21     6.39   552.86     1.06   518.72   501.19     0.43

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     30.86    35.35    31.50     3.85     0.93     0.39     1.40
 MEAN    31.54    27.39    23.50     3.89     0.93     0.38     1.63
 HUB     37.06    10.40     6.50     3.90     0.93     0.39     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   666.7491   314.0470   588.1572  1106.8654     0.6024    -0.1788     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.0209     6.2950   516.7814   501.0312     0.4587    28.1000    30.6000     2.5000

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   555.1581   117.6975   542.5383  1118.5450     0.4963     0.1451     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.9987     6.7737   527.7406   500.8651   491.5697     0.0250     0.2987

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   580.2136     0.0000   580.2136  1116.0957     0.5199     0.2063     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6510	525.4570	500.8421	0.0000	0.0600	0.0387	0.0620

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8792	7.9785	1.1990	552.5135	30.4982	248.5739	1.9269

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
189739.313	0.442	687.956	617099.250	0.105080E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.795 EfDer = 1.000 SH = 0.106706E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.161	3675.098	7.978	552.513	1.000	1.000	0.980

W Kg/sec = 29.164 Wdry = 64.154 WH2O = 0.007 lbm/sec H2O = 0.061g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
122.007	3560.866	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
107780.055	50341.789	1.527	545.479	357.171	424.468	1.188

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	474.21	-0.16	474.21	0.42	0.71	623.65
MEAN	17.74	0.00	-0.02	474.21	-0.16	474.21	0.42	0.66	
HUB	15.05	0.00	-0.02	474.21	-0.16	474.21	0.42	0.60	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.63	46.36	7.27	643.67	799.62	7.07	534.44	500.77	0.28
MEAN	50.19	43.40	6.79	568.90	740.75	7.07	534.44	500.77	0.28
HUB	45.52	38.84	6.68	482.67	676.76	7.07	534.44	500.77	0.28

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	560.26	298.02	474.42	1149.85	0.49	2.26	1.98	8.75
MEAN	17.51	573.49	310.84	481.95	1146.14	0.50	2.34	2.07	6.78
HUB	14.85	623.47	385.43	490.05	1142.67	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	635.33	582.11	337.31	0.51	5907.03	0.92	0.91		
MEAN	561.46	543.22	250.62	0.47	5444.57	0.92	0.91	0.91	1.48
HUB	476.26	498.40	90.83	0.44	5726.13	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.54	1.20	8.12	582.96	1.06	557.74	513.23	0.16
MEAN	9.41	1.18	7.94	580.58	1.05	554.15	512.31	0.17
HUB	9.48	1.19	7.77	582.03	1.05	550.79	512.91	0.19

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.14	35.41	31.50	3.91	0.93	0.40	1.40
MEAN	32.82	27.48	23.50	3.98	0.93	0.40	1.62
HUB	38.19	10.50	6.50	4.00	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	633.5837	312.8758	550.9420	1141.3861	0.5551	-0.1641	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4602	7.6933	549.6033	512.8146	0.1908	29.5919	31.5000	1.9081

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	531.6735	115.9810	518.8690	1151.2543	0.4618	0.1486	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4411	8.1720	559.1439	512.7111	451.3937	0.0225	0.3215

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	542.4531	0.0000	542.4531	1150.2671	0.4716	0.2317	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1027	558.2164	512.6671	0.0000	0.0600	0.0379	0.1033

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8812	9.4176	1.1804	581.8556	29.3433	238.1843	1.8464

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
182629.516	0.452	662.177	591355.000	0.107927E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.078 EfDer = 1.000 SH = 0.110030E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.161	3675.098	9.418	581.855	1.000	1.000	0.980

W Kg/sec = 29.164 Wdry = 64.154 WH2O = 0.007 lbm/sec H2O = 0.072g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
106.072	3469.920	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
94707.070	50341.719	1.653	513.330	310.541	395.845	1.275

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	442.79	-0.15	442.79	0.38	0.66	583.19
MEAN	16.97	0.00	-0.02	442.79	-0.15	442.79	0.38	0.61	
HUB	14.32	0.00	-0.02	442.79	-0.15	442.79	0.38	0.55	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.37	46.36	8.01	617.69	760.13	8.53	566.11	512.63	0.13
MEAN	50.88	43.80	7.08	544.27	701.76	8.53	566.11	512.63	0.13
HUB	46.06	37.84	8.22	459.26	638.06	8.53	566.11	512.63	0.13

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	530.71	288.78	445.26	1179.86	0.45	2.16	1.89	8.34
MEAN	16.57	540.57	296.63	451.92	1176.23	0.46	2.24	1.97	6.35
HUB	13.89	583.90	360.83	459.07	1172.78	0.50	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	605.51	546.42	316.73	0.46	5455.11	0.92	0.91		
MEAN	531.55	509.33	234.92	0.43	4918.81	0.92	0.91	0.91	1.50
HUB	445.47	466.80	84.64	0.40	5014.11	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.02	1.17	9.61	609.96	1.05	587.34	523.13	0.08
MEAN	10.85	1.15	9.41	607.20	1.04	583.73	522.14	0.09
HUB	10.88	1.16	9.20	607.69	1.04	580.30	522.34	0.10

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.97	35.43	31.50	3.93	0.93	0.42	1.40
MEAN	33.28	27.47	23.50	3.97	0.93	0.40	1.62
HUB	38.17	10.45	6.50	3.95	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	582.2895	298.2932	500.0822	1173.4807	0.4962	-0.1146	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.9006	9.2323	581.0538	522.5198	0.0937	30.8156	32.4000	1.5844

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	495.0864	111.0334	482.4750	1181.0718	0.4192	0.1696	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.8856	9.6613	588.5986	522.4568	432.2457	0.0199	0.3414

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	491.0261	0.0000	491.0261	1181.3636	0.4156	0.2545	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.6569	588.9221	522.4028	0.0000	0.0600	0.0375	0.1667

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8817	10.8591	1.1531	608.2814	26.4276	241.4142	1.8714

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
164563.656	0.449	596.674	586145.063	0.111713E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.282 EfDer = 1.000 SH = 0.114729E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.161	3675.098	10.859	608.281	1.000	1.000	0.980

W Kg/sec = 29.164 Wdry = 64.154 WH2O = 0.007 lbm/sec H2O = 0.084g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
94.056	3393.711	1.380	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
84449.094	50341.625	1.851	509.668	275.385	384.739	1.397

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	397.67	-0.14	397.67	0.33	0.60	542.54
MEAN	15.91	0.00	-0.02	397.67	-0.14	397.67	0.33	0.54	
HUB	13.07	0.00	-0.02	397.67	-0.14	397.67	0.33	0.49	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.92	47.36	8.56	587.55	709.58	10.06	595.59	522.38	0.07
MEAN	52.08	44.80	7.28	510.35	647.10	10.06	595.59	522.38	0.07
HUB	46.52	38.84	7.68	419.17	577.89	10.06	595.59	522.38	0.07

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	494.91	286.97	403.22	1207.34	0.41	2.05	1.78	7.43
MEAN	15.50	498.11	283.29	409.72	1203.25	0.41	2.13	1.86	5.75
HUB	12.59	529.74	327.24	416.58	1199.30	0.44	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	575.36	495.73	288.39	0.41	5150.76	0.92	0.91		
MEAN	497.03	462.12	213.74	0.38	4392.42	0.92	0.91	0.91	1.54
HUB	403.78	423.55	76.54	0.35	4121.72	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.51	1.15	11.16	634.80	1.04	615.14	531.64	0.05
MEAN	12.26	1.13	10.91	630.90	1.04	610.98	530.31	0.05
HUB	12.17	1.12	10.66	629.51	1.03	606.98	529.85	0.06

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	35.44	35.57	31.50	4.07	0.93	0.44	1.40
MEAN	34.66	27.55	23.50	4.05	0.93	0.42	1.64
HUB	38.15	10.41	6.50	3.91	0.93	0.41	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	552.6802	288.4798	471.4179	1199.4882	0.4608	-0.1927	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.2868	10.6428	607.2194	530.5626	0.0568	31.4642	33.0000	1.5358

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   476.4913   108.8072   463.9019  1205.6873     0.3952     0.0813     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.2631    11.0272   613.5126   530.4965   410.5396     0.0369     0.3531

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   461.9071     0.0000   461.9071  1206.7350     0.3828     0.2772     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.0984   614.6126   530.4929     0.0000     0.0600     0.0374     0.1321

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8831    12.2624     1.1292   631.7347    23.4551   249.2038     1.9318

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 146134.656       0.441     529.854  597085.125   0.117115E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.39902E-02
 trTOT =     1.3099   Tt4 =   631.7347   T1  =   482.2722

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    930235.13   3372.8433    176.0040      2.3731      0.8684      5.6497      1.3099     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 69.9%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.987   EfDer =  0.999    SH =  0.969892E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     63.049    3644.594       5.167     482.272       1.000       1.000       0.980
  W Kg/sec =  28.659  Wdry =  63.043  WH2O = 0.006  lbm/sec   H2O =   0.042g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     172.954    3779.722       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 140743.656   49469.711       1.642     831.557     506.282     619.754       1.224

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   406.21    -0.14   406.21     0.39     0.73   680.45
 MEAN    17.06     0.00    -0.02   406.21    -0.14   406.21     0.39     0.64
 HUB     12.51     0.00    -0.02   406.21    -0.14   406.21     0.39     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.24    50.47     7.77   656.14   771.82     4.67   469.00   465.08     2.16
 MEAN    53.19    47.20     5.99   542.60   677.92     4.67   469.00   465.08     2.16
 HUB     44.42    38.62     5.80   397.88   568.71     4.67   469.00   465.08     2.16

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   641.96   370.86   524.00  1076.00      0.60     7.29     6.52    16.04
 MEAN    18.04   675.71   409.01   537.86  1070.50      0.63     7.43     6.80    12.53
 HUB     15.00   776.76   533.18   564.88  1060.89      0.73     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    656.14   596.63   285.28     0.55  7653.70      0.92     0.91
 MEAN   573.64   562.49   164.63     0.53  7379.34      0.92     0.91     0.91     1.34
 HUB    477.08   567.65    56.10     0.54  7999.42      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.70     1.30     5.28   521.42     1.08   488.28   486.93     1.09
 MEAN     6.64     1.28     5.09   520.02     1.08   483.30   486.31     1.29
 HUB      6.77     1.31     4.76   523.19     1.08   474.67   488.18     1.75

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.29    28.57    24.20     4.37     0.93     0.36     1.80
 MEAN    37.25    17.02    12.70     4.32     0.92     0.31     2.22
 HUB     43.35    -5.67    -9.30     3.63     0.92     0.17     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   713.8255   408.2175   585.5812  1067.4591     0.6687    -0.0723     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6860     4.9710   480.5697   487.1245     1.4247    34.8809    35.4000     0.5191

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   556.7557   136.1994   539.8394  1085.1273     0.5131     0.3211     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6589     5.5765   496.6182   486.7597   554.9116     0.0263     0.4305

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   552.4587     0.0000   552.4587  1085.5220     0.5089     0.3525     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5756   497.0041   486.7140     0.0000     0.0600     0.0382     0.3206
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8798     6.6393     1.2849   521.5419    39.2708   217.0605     1.6826

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 244220.109       0.567     870.150  672895.688   0.100751E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.980   EfDer =  1.000    SH =  0.104387E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     63.049    3644.594       6.639     521.542       1.000       1.000       0.980
 W Kg/sec =  28.659  Wdry =  63.043  WH2O = 0.007  lbm/sec   H2O =   0.052g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    139.979    3634.651       1.381       0.248      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 121803.789   49469.570       1.441     590.487     409.767     468.502       1.143

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   495.06    -0.17   495.06     0.45     0.75   651.79
 MEAN    18.08     0.00    -0.02   495.06    -0.17   495.06     0.45     0.70
 HUB     15.21     0.00    -0.02   495.06    -0.17   495.06     0.45     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.87    46.36     6.51   653.59   820.06     5.77   501.84   486.67     0.73
 MEAN    49.28    42.30     6.98   574.98   758.87     5.77   501.84   486.67     0.73
 HUB     44.35    37.84     6.51   483.76   692.30     5.77   501.84   486.67     0.73

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   576.44   300.90   491.68  1117.01     0.52     2.33     2.04     9.02
 MEAN    18.01   590.73   313.53   500.65  1112.88     0.53     2.40     2.13     7.35
 HUB     15.22   642.68   390.71   510.27  1109.02     0.58     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    649.46   602.69   348.56     0.54  6147.88     0.92     0.91
 MEAN   572.81   563.81   259.27     0.51  5649.83     0.92     0.91     0.91     1.46
 HUB    484.17   518.76    93.46     0.47  5950.34     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.06     1.21     6.74   552.98     1.06   526.27   501.18     0.35
 MEAN     7.94     1.20     6.57   550.43     1.06   522.38   500.09     0.39
 HUB      8.02     1.21     6.40   551.97     1.06   518.77   500.81     0.44

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.47    35.33    31.50     3.83     0.93     0.40     1.40
 MEAN    32.06    27.38    23.50     3.88     0.93     0.38     1.63
 HUB     37.44    10.38     6.50     3.88     0.93     0.39     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   656.3315   314.4147   576.1202  1107.2805     0.5927    -0.1744     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   7.9929     6.3199   517.1695   500.7250     0.4561    28.6233    30.6000     1.9767

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   544.0317   115.3386   531.6648  1118.8230     0.4863     0.1566     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     7.9727     6.7958   528.0040   500.5666   491.5697     0.0241     0.3061

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
  17.8235   568.2016     0.0000   568.2016  1116.5078     0.5089     0.2146     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6789	525.8459	500.5430	0.0000	0.0600	0.0379	0.0752

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8805	7.9528	1.1978	551.7937	30.2527	245.4966	1.9031

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
188213.000	0.446	670.598	604283.125	0.105558E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 7.086 EfDer = 1.000 SH = 0.107267E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.049	3644.594	7.953	551.794	1.000	1.000	0.980

W Kg/sec = 28.659 Wdry = 63.043 WH2O = 0.007 lbm/sec H2O = 0.062g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
120.201	3533.613	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
105783.023	49469.516	1.550	545.479	351.887	424.468	1.206

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	465.42	-0.16	465.42	0.41	0.70	618.87
MEAN	17.74	0.00	-0.02	465.42	-0.16	465.42	0.41	0.65	
HUB	15.05	0.00	-0.02	465.42	-0.16	465.42	0.41	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.91	46.36	7.55	638.33	790.12	7.08	534.39	500.48	0.29
MEAN	50.49	43.40	7.09	564.17	731.50	7.08	534.39	500.48	0.29
HUB	45.81	38.84	6.97	478.67	667.75	7.08	534.39	500.48	0.29

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	553.68	298.77	466.15	1149.53	0.48	2.26	1.98	8.75
MEAN	17.51	566.36	310.66	473.55	1145.82	0.49	2.34	2.07	6.78
HUB	14.85	615.36	383.15	481.51	1142.32	0.54	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	630.06	571.89	331.29	0.50	5921.82	0.92	0.91		
MEAN	556.80	533.70	246.13	0.47	5441.51	0.92	0.91	0.91	1.49
HUB	472.31	489.70	89.15	0.43	5692.24	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.50	1.19	8.12	582.07	1.05	557.43	512.90	0.16
MEAN	9.36	1.18	7.94	579.61	1.05	553.83	511.95	0.17
HUB	9.43	1.19	7.76	580.89	1.05	550.46	512.48	0.19

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.66	35.40	31.50	3.90	0.93	0.41	1.40
MEAN	33.27	27.46	23.50	3.96	0.93	0.40	1.62
HUB	38.51	10.49	6.50	3.99	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	624.6688	312.7029	540.7662	1141.2830	0.5473	-0.1610	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4168	7.7009	549.5033	512.4434	0.1926	30.0390	31.5000	1.4610

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	521.9710	113.8644	509.4003	1151.0691	0.4535	0.1585	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.3990	8.1771	558.9641	512.3439	451.3937	0.0219	0.3277

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	532.4214	0.0000	532.4214	1150.1282	0.4629	0.2386	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1103	558.0814	512.3006	0.0000	0.0600	0.0373	0.1138

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8820	9.3760	1.1790	580.8544	29.0620	235.7062	1.8272

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
180877.984	0.456	644.463	579843.938	0.108575E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.324 EfDer = 0.999 SH = 0.110796E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.049	3644.594	9.376	580.854	1.000	1.000	0.980

W Kg/sec = 28.659 Wdry = 63.042 WH2O = 0.007 lbm/sec H2O = 0.072g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
104.605	3444.084	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
93099.953	49469.445	1.676	513.330	306.249	395.845	1.293

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	435.27	-0.15	435.27	0.38	0.65	578.85
MEAN	16.97	0.00	-0.02	435.27	-0.15	435.27	0.38	0.60	
HUB	14.32	0.00	-0.02	435.27	-0.15	435.27	0.38	0.54	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.61	46.36	8.25	612.57	751.59	8.52	565.64	512.26	0.13
MEAN	51.12	43.80	7.32	539.75	693.51	8.52	565.64	512.26	0.13
HUB	46.31	37.84	8.47	455.45	630.11	8.52	565.64	512.26	0.13

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	524.84	288.95	438.14	1179.14	0.45	2.16	1.89	8.34
MEAN	16.57	534.23	296.10	444.67	1175.52	0.45	2.24	1.97	6.35
HUB	13.89	576.69	358.56	451.67	1172.07	0.49	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	600.48	537.60	311.53	0.46	5458.27	0.92	0.91		
MEAN	527.13	501.10	231.04	0.43	4910.03	0.92	0.91	0.91	1.51
HUB	441.77	459.27	83.22	0.39	4982.49	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.96	1.17	9.58	608.74	1.05	586.62	522.72	0.08
MEAN	10.79	1.15	9.38	605.94	1.04	583.02	521.71	0.09
HUB	10.81	1.15	9.18	606.31	1.04	579.60	521.87	0.10

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.40	35.41	31.50	3.91	0.93	0.42	1.40
MEAN	33.66	27.46	23.50	3.96	0.93	0.41	1.62
HUB	38.44	10.44	6.50	3.94	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	574.9127	297.7629	491.7945	1172.8785	0.4902	-0.1129	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.8384	9.2157	580.4553	522.0845	0.0957	31.1933	32.4000	1.2067

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	486.9113	109.2000	474.5082	1180.4323	0.4125	0.1776	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.8245	9.6428	587.9593	522.0236	432.2457	0.0195	0.3468

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	482.9211	0.0000	482.9211	1180.7136	0.4090	0.2603	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.6382	588.2720	521.9706	0.0000	0.0600	0.0371	0.1744

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8822	10.7985	1.1517	606.9976	26.1450	239.2941	1.8550

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
162802.094	0.452	580.060	575378.250	0.112558E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.483 EfDer = 0.999 SH = 0.115705E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.049	3644.594	10.799	606.997	1.000	1.000	0.980

W Kg/sec = 28.659 Wdry = 63.042 WH2O = 0.007 lbm/sec H2O = 0.085g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
92.847	3369.100	1.380	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
83141.977	49469.348	1.875	509.668	271.845	384.739	1.415

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	391.51	-0.13	391.51	0.33	0.59	538.61
MEAN	15.91	0.00	-0.02	391.51	-0.13	391.51	0.33	0.54	
HUB	13.07	0.00	-0.02	391.51	-0.13	391.51	0.33	0.48	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	56.11	47.36	8.75	582.67	702.10	10.03	594.69	521.95	0.07
MEAN	52.28	44.80	7.48	506.11	639.98	10.03	594.69	521.95	0.07
HUB	46.73	38.84	7.89	415.69	571.13	10.03	594.69	521.95	0.07

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	489.85	286.49	397.33	1206.22	0.41	2.05	1.78	7.43
MEAN	15.50	492.65	282.39	403.68	1202.16	0.41	2.13	1.86	5.75
HUB	12.59	523.56	325.11	410.38	1198.24	0.44	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	570.58	488.45	284.09	0.40	5142.11	0.92	0.91		
MEAN	492.90	455.27	210.51	0.38	4378.54	0.92	0.91	0.91	1.55
HUB	400.43	417.23	75.31	0.35	4094.95	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.43	1.15	11.11	633.26	1.04	613.99	531.15	0.05
MEAN	12.18	1.13	10.86	629.36	1.04	609.87	529.82	0.05
HUB	12.08	1.12	10.62	627.91	1.03	605.90	529.34	0.06

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	35.79	35.56	31.50	4.06	0.93	0.45	1.40
MEAN	34.97	27.54	23.50	4.04	0.93	0.42	1.64
HUB	38.39	10.40	6.50	3.90	0.93	0.41	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	546.0554	287.5699	464.1982	1198.5264	0.4556	-0.1907	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.2036	10.6039	606.2410	530.0652	0.0585	31.7781	33.0000	1.2219

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   469.1784   107.1373   456.7822  1204.7014     0.3895     0.0894     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.1815    10.9870   612.5052   530.0018   410.5396     0.0362     0.3574

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   454.9135     0.0000   454.9135  1205.7107     0.3773     0.2819     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.0549   613.5648   529.9972     0.0000     0.0600     0.0371     0.1392

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8834    12.1803     1.1280   630.1726    23.1768   247.4240     1.9180

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 144397.859       0.444     514.486  586716.875   0.118199E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.56964E-02
 trTOT =     1.3067   Tt4 =   630.1726   T1  =   482.2721

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    920511.13   3279.7563    172.9544      2.3572      0.8699      5.9874      1.3067     37.3740
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100µm, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.945   EfDer =  0.985    SH =  0.365015E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     75.576    3889.194       5.167    462.095       1.000       1.000       0.980
 W Kg/sec =  34.353  Wdry =  75.574  WH2O = 0.003  lbm/sec   H2O =   0.016g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    202.931    4120.518       1.381       0.248      53.349      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 167523.047   59300.199       1.400     831.557     594.007     619.754       1.043

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   483.50    -0.17   483.50     0.47     0.83   741.80
 MEAN    17.06     0.00    -0.02   483.50    -0.17   483.50     0.47     0.74
 HUB     12.51     0.00    -0.02   483.50    -0.17   483.50     0.47     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.38    50.47     4.91   700.17   851.03     4.45   443.29   452.53     2.65
 MEAN    50.15    47.20     2.95   579.01   754.47     4.45   443.29   452.53     2.65
 HUB     41.30    38.62     2.68   424.58   643.57     4.45   443.29   452.53     2.65

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   726.14   354.57   633.69  1043.98     0.70     7.29     6.52    16.04
 MEAN    18.04   770.91   412.30   651.40  1038.59     0.74     7.43     6.80    12.53
 HUB     15.00   909.96   579.49   701.57  1024.86     0.89     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    700.17   721.81   345.60     0.69  7318.24     0.92     0.90
 MEAN   612.14   681.36   199.84     0.66  7439.07     0.92     0.90     0.90     1.21
 HUB    509.09   705.10    70.40     0.69  8694.50     0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.78     1.31     4.93   502.05     1.09   459.64   478.30     1.32
 MEAN     6.81     1.32     4.74   502.71     1.09   454.91   478.76     1.59
 HUB      7.12     1.38     4.29   509.56     1.10   442.96   483.02     2.60

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.23    28.61    24.20     4.41     0.93     0.27     1.80
 MEAN    32.33    17.06    12.70     4.36     0.91     0.22     2.22
 HUB     39.56    -5.73    -9.30     3.57     0.91     0.07     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.985       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   832.6525   411.4980   723.8644  1031.8378     0.8070    -0.1061     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.8816     4.5036   449.0087   480.0487     2.0178    29.6171    35.4000     5.7829

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   677.8928   165.8333   657.2959  1053.2152     0.6436     0.2306     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.8110     5.1714   467.8127   479.5774   554.9116     0.0414     0.3607

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   679.4662     0.0000   679.4662  1053.0049     0.6453     0.2562     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.1129	467.6447	479.4538	0.0000	0.0600	0.0716	0.2046

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8256	6.7430	1.3049	504.7730	42.6786	237.4634	1.8408

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
265341.219	0.541	1133.245	863454.188	0.366094E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.575 EfDer = 0.990 SH = 0.366094E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
75.576	3889.194	6.743	504.773	1.000	1.000	0.980

W Kg/sec = 34.353 Wdry = 75.574 WH2O = 0.003 lbm/sec H2O = 0.018g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
162.533	3942.482	1.381	0.248	53.349	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
146465.031	59300.199	1.241	590.487	475.764	468.502	0.985

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	595.30	-0.21	595.30	0.56	0.86	706.99
MEAN	18.08	0.00	-0.02	595.30	-0.21	595.30	0.56	0.80	
HUB	15.21	0.00	-0.02	595.30	-0.21	595.30	0.56	0.74	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.53	46.36	3.17	697.46	917.12	5.46	476.27	479.37	0.69
MEAN	45.88	42.30	3.58	613.57	855.04	5.46	476.27	479.37	0.69
HUB	40.94	37.84	3.10	516.22	788.08	5.46	476.27	479.37	0.69

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	646.76	276.05	584.88	1090.91	0.59	2.33	2.04	9.02
MEAN	18.01	666.44	301.22	594.48	1087.39	0.61	2.40	2.13	7.35
HUB	15.22	727.51	403.94	605.07	1084.22	0.67	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	693.05	718.31	416.99	0.66	5641.21	0.92	0.91		
MEAN	611.25	670.46	310.03	0.62	5428.73	0.92	0.91	0.91	1.37
HUB	516.66	615.48	112.73	0.57	6152.23	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.19	1.22	6.48	535.57	1.06	501.93	495.16	0.29
MEAN	8.13	1.21	6.33	534.41	1.06	498.69	494.62	0.32
HUB	8.33	1.24	6.18	538.36	1.07	495.79	496.53	0.35

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.27	35.49	31.50	3.99	0.93	0.32	1.40
MEAN	26.87	27.54	23.50	4.04	0.92	0.32	1.63
HUB	33.73	10.55	6.50	4.05	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.990	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	763.4572	302.0692	701.1570	1077.0083	0.7089	-0.2347	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2020	5.8883	489.2435	495.4768	0.4321	23.3071	30.6000	7.2929

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	659.5112	139.8211	644.5192	1090.0298	0.6050	0.0244	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.1431	6.3775	501.1344	495.2722	491.5697	0.0412	0.2229

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	701.6173	0.0000	701.6173	1084.9901	0.6467	0.1009	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.1218	496.5298	495.1830	0.0000	0.0600	0.0731	-0.1109

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8263	8.0827	1.1987	536.1091	31.3365	279.8581	2.1694

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
194889.906	0.406	832.355	781326.000	0.366094E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.935 EfDer = 0.992 SH = 0.366094E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
75.576	3889.194	8.083	536.109	1.000	1.000	0.980

W Kg/sec = 34.353 Wdry = 75.574 WH2O = 0.003 lbm/sec H2O = 0.021g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
139.739	3825.526	1.381	0.248	53.349	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
126151.102	59300.199	1.334	545.479	409.055	424.468	1.038

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	555.04	-0.19	555.04	0.50	0.80	670.00
MEAN	17.74	0.00	-0.02	555.04	-0.19	555.04	0.50	0.74	
HUB	15.05	0.00	-0.02	555.04	-0.19	555.04	0.50	0.69	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.83	46.36	4.47	681.17	878.82	6.81	511.34	495.10	0.21
MEAN	47.33	43.40	3.93	602.04	818.99	6.81	511.34	495.10	0.21
HUB	42.63	38.84	3.79	510.79	754.44	6.81	511.34	495.10	0.21

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	617.39	278.89	550.81	1126.89	0.55	2.26	1.98	8.75
MEAN	17.51	635.18	301.89	558.86	1123.62	0.57	2.34	2.07	6.78
HUB	14.85	692.97	397.33	567.75	1120.64	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	672.34	676.90	393.45	0.60	5528.73	0.92	0.91		
MEAN	594.17	630.67	292.28	0.56	5288.40	0.92	0.91	0.91	1.40
HUB	504.00	577.69	106.68	0.52	5903.18	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.68	1.20	7.91	566.28	1.06	535.64	508.52	0.11
MEAN	9.61	1.19	7.76	564.97	1.05	532.53	507.97	0.11
HUB	9.80	1.21	7.59	568.32	1.06	529.72	509.40	0.12

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.85	35.54	31.50	4.04	0.93	0.34	1.40
MEAN	28.38	27.61	23.50	4.11	0.92	0.34	1.62
HUB	34.99	10.64	6.50	4.14	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	716.0833	303.8685	648.4128	1115.9264	0.6417	-0.2039	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.6764	7.3592	525.3076	508.6239	0.1387	25.1094	31.5000	6.3906

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	625.6119	136.4730	610.5452	1126.2521	0.5555	0.0380	2.3726

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.6287     7.8280   535.0626   508.4940   451.3937     0.0346     0.2554

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   642.4938     0.0000   642.4938  1124.4177     0.5714     0.1466     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.6988   533.3455   508.4065     0.0000     0.0600     0.0591    -0.0285

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8469     9.5811     1.1854   566.5236    30.4148   265.5406     2.0585

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 189221.266       0.419     808.144  738978.188   0.366094E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 4.504   EfDer =  0.995    SH =  0.366094E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     75.576    3889.194       9.581     566.523       1.000       1.000       0.980
 W Kg/sec =  34.353  Wdry =  75.574  WH2O = 0.003  lbm/sec   H2O =   0.024g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    121.183    3721.421       1.381       0.249      53.349      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 109780.039   59300.199       1.447     513.330     354.755     395.845       1.116

ROTOR LEADING EDGE CONDITIONS, STAGE   4

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    19.26     0.00    -0.02   513.26    -0.18   513.26     0.45     0.73   625.46
 MEAN   16.97     0.00    -0.02   513.26    -0.18   513.26     0.45     0.68
 HUB    14.32     0.00    -0.02   513.26    -0.18   513.26     0.45     0.62

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    51.87    46.36     5.51   653.68   831.24     8.35   545.35   508.37     0.08
 MEAN   48.30    43.80     4.50   575.98   771.62     8.35   545.35   508.37     0.08
 HUB    43.45    37.84     5.61   486.02   706.98     8.35   545.35   508.37     0.08

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    18.88   581.39   274.91   512.29  1160.03     0.50     2.16     1.89     8.34
 MEAN   16.57   595.70   291.00   519.79  1156.59     0.52     2.24     1.97     6.35
 HUB    13.89   646.37   372.95   527.92  1153.40     0.56     2.26     2.10     4.19

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   640.78   629.53   365.87     0.54  5193.64     0.92     0.91
 MEAN  562.51   586.43   271.51     0.51  4826.02     0.92     0.91     0.91     1.42
 HUB   471.42   537.03    98.47     0.47  5182.86     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    11.26     1.18     9.50   594.85     1.05   567.69   519.68     0.05
 MEAN   11.13     1.16     9.31   592.85     1.05   564.33   518.91     0.05
 HUB    11.26     1.17     9.12   594.80     1.05   561.22   519.67     0.05

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    28.22    35.53    31.50     4.03     0.93     0.36     1.40
 MEAN   29.24    27.58    23.50     4.08     0.92     0.36     1.62
 HUB    35.24    10.57     6.50     4.07     0.92     0.37     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.995       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   649.0269   292.6378   579.3091  1152.4224     0.5632    -0.1363     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   11.1971     9.0523   560.3224   519.3954     0.0551    26.8006    32.4000     5.5994
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   574.3846   128.8177   559.7532  1159.9457     0.4952     0.0779     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    11.1619    9.4597   567.6588   519.3138   432.2457     0.0285     0.2846

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   569.8206     0.0000   569.8206  1160.3505     0.4911     0.1877     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.4548   568.0812   519.2459     0.0000     0.0600     0.0472     0.0753

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8628    11.1263     1.1613   594.1656    27.6428   266.0313     2.0623

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 172050.406       0.419     734.809  724091.625   0.366094E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.083   EfDer =  0.997    SH =  0.366094E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     75.576    3889.194      11.126     594.165       1.000       1.000       0.980
 W Kg/sec =  34.353  Wdry =  75.574  WH2O = 0.003  lbm/sec   H2O =   0.028g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    106.869    3633.825       1.381       0.249      53.349      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  96665.563   59300.199       1.629     509.668     312.872     384.739       1.230

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   455.19    -0.16   455.19     0.39     0.66   580.93
 MEAN    15.91     0.00    -0.02   455.19    -0.16   455.19     0.39     0.60
 HUB     13.07     0.00    -0.02   455.19    -0.16   455.19     0.39     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.80    47.36     6.44   621.77   770.71    10.04   577.52   519.23     0.04
 MEAN    49.88    44.80     5.08   540.08   706.44    10.04   577.52   519.23     0.04
 HUB     44.27    38.84     5.43   443.59   635.70    10.04   577.52   519.23     0.04

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   536.96   280.03    458.15  1190.89      0.45     2.05     1.78     7.43
 MEAN    15.50   544.61   281.92    465.96  1186.66      0.46     2.13     1.86     5.75
 HUB     12.59   583.16   339.40    474.22  1182.64      0.49     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    608.88   563.95   328.85     0.47  5026.62      0.92     0.91
 MEAN   525.98   526.01   244.06     0.44  4371.60      0.92     0.91     0.91     1.47
 HUB    427.30   482.29    87.90     0.41  4275.15      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.92     1.16    11.26   621.57     1.05   598.41   529.32     0.02
 MEAN    12.68     1.14    10.99   618.00     1.04   594.18   528.04     0.03
 HUB     12.64     1.14    10.73   617.47     1.04   590.16   527.86     0.03

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.43    35.67    31.50     4.17     0.93     0.40     1.40
 MEAN    31.18    27.64    23.50     4.14     0.92     0.38     1.64
 HUB     35.59    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   611.7329   287.0908   540.1815  1181.3938     0.5178    -0.2170     2.0437
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    Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
   12.7103    10.6111   588.9643   528.3547     0.0286    27.9893    33.0000     5.0107

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   547.5218   125.0271   533.0557  1187.3792     0.4611    -0.0177     2.1315

   BlockageTh  PtTh       PsTh       TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.6577    10.9613   594.9410   528.2519   410.5396     0.0500     0.3048

    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   529.1544     0.0000   529.1544  1188.9384     0.4451     0.2212     0.5109

   Blockage4   Ps4       Ts4        TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.0754   596.5314   528.2653     0.0000     0.0600     0.0451     0.0474

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
    0.8699    12.6663     1.1384   619.0144    24.8495   270.2948     2.0953

Del Enthalpy   Del_H/U^2    GHP       Reynolds#        SH
 154744.297       0.417     660.897  729473.063   0.366094E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3396   Tt4 =   619.0144   T1  =   462.0947

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    976247.06   4169.4502    202.9310      2.4512      0.8264      2.9451      1.3396     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 75.6%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.292   EfDer =  0.998    SH =  0.366605E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     66.718    3626.345       5.167     462.094       1.000       1.000       0.980
  W Kg/sec =  30.326  Wdry =  66.716  WH2O = 0.002  lbm/sec   H2O =   0.016g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     179.145   3842.035       1.381       0.248      53.349      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 143616.188   52349.641       1.586     831.557     524.385     619.754       1.182

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   414.50    -0.14   414.50     0.40     0.75   691.66
 MEAN    17.06     0.00    -0.02   414.50    -0.14   414.50     0.40     0.66
 HUB     12.51     0.00    -0.02   414.50    -0.14   414.50     0.40     0.56

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.59    50.47     7.12   652.85   773.44     4.63   448.28   452.48     2.15
 MEAN    52.49    47.20     5.29   539.88   680.76     4.63   448.28   452.48     2.15
 HUB     43.69    38.62     5.07   395.89   573.28     4.63   448.28   452.48     2.15

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   646.05   360.99   535.79  1051.68      0.61     7.29     6.52    16.04
 MEAN    18.04   681.47   402.26   550.08  1046.29      0.65     7.43     6.80    12.53
 HUB     15.00   786.95   532.28   579.64  1036.33      0.76     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    652.85   610.13   291.86     0.58  7450.24      0.92     0.91
 MEAN   570.77   575.32   168.51     0.55  7257.54      0.92     0.91     0.91     1.31
 HUB    474.69   582.49    57.59     0.56  7985.93      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.22   500.02     1.08   466.45   477.07     1.03
 MEAN     6.67     1.29     5.03   499.04     1.08   461.69   476.56     1.23
 HUB      6.84     1.32     4.68   502.75     1.09   452.94   478.87     1.74

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.97    28.58    24.20     4.38     0.93     0.34     1.80
 MEAN    36.18    17.03    12.70     4.33     0.92     0.29     2.22
 HUB     42.56    -5.67    -9.30     3.63     0.92     0.15     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   722.3629   401.4752   600.5214  1042.8252     0.6927    -0.0776     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7218     4.8951   458.6333   477.4852     1.3844    33.7645    35.4000     1.6355

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   569.5626   139.3324   552.2572  1060.7159     0.5370     0.3026     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6904     5.5113   474.5110   477.2459   554.9116     0.0278     0.4157

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   565.5915     0.0000   565.5915  1061.1033     0.5330     0.3346     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5062   474.8758   477.1989     0.0000     0.0600     0.0418     0.2997
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8740     6.6657     1.2900   500.6005    38.5066   221.4397     1.7166

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 239418.703       0.562     902.682  740232.188   0.368046E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.260   EfDer =  1.000    SH =  0.368046E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     66.718    3626.345       6.666     500.600       1.000       1.000       0.980
 W Kg/sec =  30.326  Wdry =  66.716  WH2O = 0.002  lbm/sec   H2O =   0.019g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    144.544    3691.320       1.381       0.248      53.349      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 124305.727   52349.641       1.396     590.487     423.109     468.502       1.107

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   505.23    -0.17   505.23     0.47     0.77   661.95
 MEAN    18.08     0.00    -0.02   505.23    -0.17   505.23     0.47     0.72
 HUB     15.21     0.00    -0.02   505.23    -0.17   505.23     0.47     0.65

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.16     46.36     5.80   650.32   823.65     5.73   480.07   477.16     0.62
 MEAN    48.56     42.30     6.26   572.10   763.39     5.73   480.07   477.16     0.62
 HUB     43.62     37.84     5.78   481.33   697.93     5.73   480.07   477.16     0.62

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   579.03   290.89   500.66  1093.03     0.53     2.33     2.04     9.02
 MEAN    18.01   594.31   305.63   509.70  1089.05     0.55     2.40     2.13     7.35
 HUB     15.22   647.29   386.30   519.39  1085.37     0.60     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    646.21   613.93   355.32     0.56  5943.52     0.92     0.91
 MEAN   569.94   574.15   264.31     0.53  5507.60     0.92     0.91     0.91     1.44
 HUB    481.74   528.08    95.45     0.49  5883.25     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.10     1.22     6.71   530.85     1.06   503.89   493.13     0.28
 MEAN     7.99     1.20     6.54   528.63     1.06   500.23   492.05     0.31
 HUB      8.08     1.21     6.37   530.54     1.06   496.85   493.02     0.35

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     30.16    35.36    31.50     3.86     0.93     0.38     1.40
 MEAN    30.95    27.41    23.50     3.91     0.93     0.37     1.63
 HUB     36.64    10.41     6.50     3.91     0.93     0.38     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   663.6008   306.4916   588.5822  1082.8834     0.6128    -0.1841     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.0422     6.2602   494.6011   492.7416     0.3721    27.5073    30.6000     3.0927

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   555.3991   117.7486   542.7739  1094.4351     0.5075     0.1316     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     8.0176     6.7397   505.2055   492.6349   491.5697     0.0262     0.2900

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   581.0704     0.0000   581.0704  1091.8738     0.5322     0.1956     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6087	502.8623	492.6038	0.0000	0.0600	0.0408	0.0453

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8764	7.9955	1.1995	530.0078	29.4077	252.1209	1.9544

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
182899.313	0.438	689.586	665106.000	0.368046E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.450 EfDer = 1.000 SH = 0.368046E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
66.718	3626.345	7.995	530.008	1.000	1.000	0.980

W Kg/sec = 30.326 Wdry = 66.716 WH2O = 0.002 lbm/sec H2O = 0.022g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
123.994	3587.453	1.381	0.248	53.349	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
107659.281	52349.641	1.503	545.479	362.967	424.468	1.169

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	473.68	-0.16	473.68	0.43	0.72	628.30
MEAN	17.74	0.00	-0.02	473.68	-0.16	473.68	0.43	0.67	
HUB	15.05	0.00	-0.02	473.68	-0.16	473.68	0.43	0.61	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.29	46.36	6.93	635.13	792.45	7.05	511.97	492.56	0.22
MEAN	49.85	43.40	6.45	561.35	734.62	7.05	511.97	492.56	0.22
HUB	45.17	38.84	6.33	476.27	671.83	7.05	511.97	492.56	0.22

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	555.28	290.09	473.48	1125.66	0.49	2.26	1.98	8.75
MEAN	17.51	568.84	303.76	480.94	1122.06	0.51	2.34	2.07	6.78
HUB	14.85	618.77	379.17	488.99	1118.70	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	626.90	581.06	336.82	0.52	5749.88	0.92	0.91		
MEAN	554.01	542.16	250.25	0.48	5320.69	0.92	0.91	0.91	1.47
HUB	469.94	497.34	90.77	0.44	5633.12	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.56	1.20	8.11	559.26	1.06	534.48	506.04	0.11
MEAN	9.43	1.18	7.93	557.08	1.05	531.07	505.09	0.12
HUB	9.52	1.19	7.76	558.67	1.05	527.89	505.80	0.13

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.49	35.43	31.50	3.93	0.93	0.40	1.40
MEAN	32.28	27.49	23.50	3.99	0.93	0.39	1.62
HUB	37.79	10.52	6.50	4.02	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	629.7044	305.7536	550.4929	1117.1543	0.5637	-0.1681	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4897	7.6691	526.4656	505.6308	0.1396	29.0486	31.5000	2.4514

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	531.2191	115.8819	518.4257	1126.8661	0.4714	0.1362	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4688	8.1474	535.6550	505.5608	451.3937	0.0234	0.3137

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	542.1594	0.0000	542.1594	1125.8505	0.4816	0.2229	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.0749	534.7136	505.5175	0.0000	0.0600	0.0387	0.0901

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8799	9.4447	1.1813	558.3374	28.3301	241.2382	1.8701

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
176252.734	0.448	664.527	636422.063	0.368046E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.770 EfDer = 1.000 SH = 0.368046E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
66.718	3626.345	9.445	558.337	1.000	1.000	0.980

W Kg/sec = 30.326 Wdry = 66.716 WH2O = 0.002 lbm/sec H2O = 0.025g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
107.737	3495.256	1.381	0.249	53.349	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
94481.352	52349.641	1.628	513.330	315.393	395.845	1.255

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	441.73	-0.15	441.73	0.39	0.66	587.45
MEAN	16.97	0.00	-0.02	441.73	-0.15	441.73	0.39	0.61	
HUB	14.32	0.00	-0.02	441.73	-0.15	441.73	0.39	0.56	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.07	46.36	7.71	609.50	752.86	8.52	542.66	505.50	0.09
MEAN	50.57	43.80	6.77	537.05	695.50	8.52	542.66	505.50	0.09
HUB	45.74	37.84	7.90	453.17	632.95	8.52	542.66	505.50	0.09

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	525.66	281.62	443.85	1155.42	0.45	2.16	1.89	8.34
MEAN	16.57	535.88	290.22	450.49	1151.87	0.47	2.24	1.97	6.35
HUB	13.89	579.20	355.08	457.60	1148.51	0.50	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	597.47	544.76	315.85	0.47	5319.97	0.92	0.91		
MEAN	524.49	507.76	234.27	0.44	4812.69	0.92	0.91	0.91	1.49
HUB	439.56	465.33	84.48	0.41	4934.20	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.05	1.17	9.61	585.40	1.05	563.19	516.71	0.05
MEAN	10.89	1.15	9.41	582.82	1.04	559.74	515.69	0.06
HUB	10.93	1.16	9.21	583.43	1.04	556.47	515.94	0.06

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.39	35.44	31.50	3.94	0.93	0.41	1.40
MEAN	32.79	27.48	23.50	3.98	0.93	0.40	1.62
HUB	37.81	10.46	6.50	3.96	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	577.9216	291.8546	498.8128	1149.0573	0.5030	-0.1169	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.9427	9.2266	557.0464	516.0940	0.0623	30.3318	32.4000	2.0682

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	493.8882	110.7647	481.3074	1156.4954	0.4271	0.1591	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.9264	9.6542	564.2831	516.0491	432.2457	0.0205	0.3345

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	489.8401	0.0000	489.8401	1156.7992	0.4234	0.2467	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.6500	564.6050	515.9982	0.0000	0.0600	0.0381	0.1563

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8807	10.8992	1.1540	583.8813	25.5446	244.1620	1.8927

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
158985.078	0.445	599.422	630070.375	0.368046E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.013 EfDer = 1.000 SH = 0.368046E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
66.718	3626.345	10.899	583.881	1.000	1.000	0.980

W Kg/sec = 30.326 Wdry = 66.716 WH2O = 0.002 lbm/sec H2O = 0.028g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
95.471	3417.945	1.381	0.249	53.349	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
84138.906	52349.641	1.823	509.668	279.502	384.739	1.377

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	396.21	-0.14	396.21	0.34	0.60	546.42
MEAN	15.91	0.00	-0.02	396.21	-0.14	396.21	0.34	0.55	
HUB	13.07	0.00	-0.02	396.21	-0.14	396.21	0.34	0.49	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.66	47.36	8.30	579.75	702.32	10.07	571.27	515.99	0.04
MEAN	51.81	44.80	7.01	503.58	640.87	10.07	571.27	515.99	0.04
HUB	46.24	38.84	7.40	413.61	572.86	10.07	571.27	515.99	0.04

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	489.73	280.50	401.44	1182.71	0.41	2.05	1.78	7.43
MEAN	15.50	493.39	277.51	407.95	1178.69	0.42	2.13	1.86	5.75
HUB	12.59	525.23	322.17	414.82	1174.81	0.45	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	567.73	493.62	287.23	0.42	5034.62	0.92	0.91		
MEAN	490.43	460.17	212.92	0.39	4302.99	0.92	0.91	0.91	1.53
HUB	398.42	421.77	76.25	0.36	4057.87	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.57	1.15	11.19	609.48	1.04	590.21	525.79	0.03
MEAN	12.32	1.13	10.93	605.76	1.04	586.20	524.41	0.03
HUB	12.23	1.12	10.68	604.51	1.04	582.35	523.95	0.03

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	34.94	35.58	31.50	4.08	0.93	0.44	1.40
MEAN	34.23	27.56	23.50	4.06	0.93	0.41	1.64
HUB	37.83	10.42	6.50	3.92	0.93	0.40	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	548.1756	282.6036	469.7145	1174.8660	0.4666	-0.1953	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.3436	10.6535	582.4485	524.6701	0.0345	31.0332	33.0000	1.9668

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   474.8842   108.4402   462.3372  1180.9240     0.4021     0.0700     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.3179    11.0353   588.4702   524.6157   410.5396     0.0379     0.3469

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   460.2311     0.0000   460.2311  1182.0028     0.3894     0.2703     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.1104   589.5723   524.6141     0.0000     0.0600     0.0379     0.1222

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8824    12.3179     1.1302   606.5813    22.7009   251.6533     1.9508

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 141348.359       0.439     532.927  641170.813   0.368112E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3127   Tt4 =   606.5813   T1  =   462.0943

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    898904.19   3389.1438    179.1455      2.3838      0.8661      5.2919      1.3127     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 72.7%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.634   EfDer =  0.999    SH =  0.366757E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      65.576    3597.008       5.167     462.094       1.000       1.000       0.980
  W Kg/sec =  29.807  Wdry =  65.573  WH2O = 0.002  lbm/sec   H2O =   0.016g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     176.078    3810.952       1.381       0.248      53.349      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 140699.422   51453.270       1.613     831.557     515.406     619.754       1.202

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   406.08    -0.14   406.08     0.39     0.74   686.07
 MEAN    17.06     0.00    -0.02   406.08    -0.14   406.08     0.39     0.65
 HUB     12.51     0.00    -0.02   406.08    -0.14   406.08     0.39     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.91    50.47     7.44   647.57   764.48     4.65   448.83   452.48     2.11
 MEAN    52.83    47.20     5.63   535.51   672.18     4.65   448.83   452.48     2.11
 HUB     44.05    38.62     5.43   392.69   564.99     4.65   448.83   452.48     2.11

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   637.17   362.04   524.32  1052.48      0.61     7.29     6.52    16.04
 MEAN    18.04   671.40   401.32   538.26  1047.10      0.64     7.43     6.80    12.53
 HUB     15.00   773.56   527.08   566.20  1037.43      0.75     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    647.57   597.03   285.54     0.57  7471.69      0.92     0.91
 MEAN   566.15   562.93   164.83     0.54  7240.65      0.92     0.91     0.91     1.33
 HUB    470.85   568.99    56.23     0.55  7907.95      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.25   499.82     1.08   467.17   476.95     1.00
 MEAN     6.65     1.29     5.06   498.65     1.08   462.40   476.32     1.20
 HUB      6.80     1.32     4.72   502.02     1.09   453.90   478.43     1.68

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.62    28.57    24.20     4.37     0.93     0.35     1.80
 MEAN    36.71    17.03    12.70     4.33     0.92     0.30     2.22
 HUB     42.95    -5.67    -9.30     3.63     0.92     0.16     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   710.4520   400.5430   586.7772  1043.8894     0.6806    -0.0749     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7042     4.9340   459.5708   477.2201     1.3361    34.3180    35.4000     1.0820

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   557.2112   136.3109   540.2811  1061.4791     0.5249     0.3118     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6752     5.5450   475.1951   476.9959   554.9116     0.0270     0.4231

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   553.0968     0.0000   553.0968  1061.8715     0.5209     0.3436     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5423   475.5647   476.9539     0.0000     0.0600     0.0398     0.3102
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8772     6.6532     1.2876   500.1653    38.0714   219.2666     1.6997

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 236714.188       0.564     877.203  725198.563   0.368295E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.618   EfDer =  1.000    SH =  0.368295E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     65.576    3597.008       6.653     500.165       1.000       1.000       0.980
 W Kg/sec =  29.807  Wdry =  65.573  WH2O = 0.002  lbm/sec   H2O =   0.019g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    142.275    3663.049       1.381       0.248      53.349      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 121757.883   51453.262       1.418     590.487     416.467     468.502       1.125

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   494.88    -0.17   494.88     0.46     0.76   656.88
 MEAN   18.08     0.00    -0.02   494.88    -0.17   494.88     0.46     0.71
 HUB    15.21     0.00    -0.02   494.88    -0.17   494.88     0.46     0.64

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    52.51    46.36     6.15   645.06   813.16     5.75   480.47   476.92     0.61
 MEAN   48.92    42.30     6.62   567.47   753.08     5.75   480.47   476.92     0.61
 HUB    43.98    37.84     6.14   477.44   687.76     5.75   480.47   476.92     0.61

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   571.59   292.75   490.93  1093.25     0.52     2.33     2.04     9.02
 MEAN   18.01   586.24   306.31   499.85  1089.23     0.54     2.40     2.13     7.35
 HUB    15.22   638.16   384.39   509.41  1085.50     0.59     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   640.98   601.89   348.23     0.55  5981.53     0.92     0.91
 MEAN  565.33   562.97   259.01     0.52  5519.78     0.92     0.91     0.91     1.45
 HUB   477.85   517.91    93.45     0.48  5854.22     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     8.08     1.21     6.72   530.36     1.06   504.09   492.91     0.28
 MEAN    7.97     1.20     6.56   528.03     1.06   500.39   491.77     0.31
 HUB     8.05     1.21     6.39   529.72     1.06   496.97   492.63     0.35

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    30.81    35.35    31.50     3.85     0.93     0.39     1.40
 MEAN   31.50    27.39    23.50     3.89     0.93     0.38     1.63
 HUB    37.04    10.40     6.50     3.90     0.93     0.39     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   652.9341   307.1738  576.1660  1083.4208     0.6027    -0.1791     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.0188     6.2918   495.0926   492.4384     0.3670    28.0636    30.6000     2.5364

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   543.8706  115.3044  531.5074  1094.8468     0.4968     0.1442     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     7.9965     6.7698   505.5869   492.3383   491.5697     0.0251     0.2981

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   568.4354     0.0000   568.4354  1092.4479     0.5203     0.2056     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6469	503.3923	492.3099	0.0000	0.0600	0.0388	0.0610

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8791	7.9762	1.1989	529.3701	29.2052	248.7901	1.9286

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
181640.797	0.442	673.115	651238.000	0.368295E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.770 EfDer = 1.000 SH = 0.368295E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.576	3597.008	7.976	529.370	1.000	1.000	0.980

W Kg/sec = 29.807 Wdry = 65.573 WH2O = 0.002 lbm/sec H2O = 0.022g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
122.091	3560.572	1.381	0.248	53.349	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
105581.633	51453.262	1.526	545.479	357.398	424.468	1.188

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	464.54	-0.16	464.54	0.42	0.71	623.59
MEAN	17.74	0.00	-0.02	464.54	-0.16	464.54	0.42	0.66	
HUB	15.05	0.00	-0.02	464.54	-0.16	464.54	0.42	0.60	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.60	46.36	7.24	629.99	782.87	7.07	512.02	492.27	0.22
MEAN	50.17	43.40	6.77	556.81	725.26	7.07	512.02	492.27	0.22
HUB	45.49	38.84	6.65	472.42	662.67	7.07	512.02	492.27	0.22

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	548.56	291.36	464.79	1125.50	0.49	2.26	1.98	8.75
MEAN	17.51	561.55	304.00	472.15	1121.88	0.50	2.34	2.07	6.78
HUB	14.85	610.49	377.13	480.07	1118.48	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	621.83	570.30	330.48	0.51	5774.99	0.92	0.91		
MEAN	549.53	532.17	245.53	0.47	5324.75	0.92	0.91	0.91	1.48
HUB	466.14	488.25	89.01	0.44	5602.78	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.53	1.19	8.12	558.52	1.06	534.32	505.74	0.11
MEAN	9.40	1.18	7.94	556.24	1.05	530.89	504.75	0.12
HUB	9.48	1.19	7.76	557.65	1.05	527.69	505.38	0.14

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.08	35.41	31.50	3.91	0.93	0.40	1.40
MEAN	32.78	27.48	23.50	3.98	0.93	0.39	1.62
HUB	38.15	10.50	6.50	4.00	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	620.4698	305.9901	539.7712	1117.2168	0.5554	-0.1644	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4562	7.6883	526.5245	505.2789	0.1398	29.5484	31.5000	1.9516

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	520.9301	113.6374	508.3844	1126.8668	0.4623	0.1476	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4370	8.1661	535.6563	505.2130	451.3937	0.0226	0.3208

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	531.5012	0.0000	531.5012	1125.9034	0.4721	0.2309	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.0965	534.7643	505.1706	0.0000	0.0600	0.0379	0.1022

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8812	9.4135	1.1802	557.4684	28.0988	238.4278	1.8483

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
174813.859	0.452	647.816	623945.688	0.368295E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.050 EfDer = 1.000 SH = 0.368295E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.576	3597.008	9.413	557.468	1.000	1.000	0.980

W Kg/sec = 29.807 Wdry = 65.573 WH2O = 0.002 lbm/sec H2O = 0.025g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
106.161	3469.680	1.381	0.249	53.349	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
92786.719	51453.262	1.652	513.330	310.779	395.845	1.274

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	433.81	-0.15	433.81	0.38	0.66	583.15
MEAN	16.97	0.00	-0.02	433.81	-0.15	433.81	0.38	0.61	
HUB	14.32	0.00	-0.02	433.81	-0.15	433.81	0.38	0.55	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.35	46.36	7.99	604.57	744.23	8.52	542.34	505.15	0.09
MEAN	50.85	43.80	7.05	532.71	687.12	8.52	542.34	505.15	0.09
HUB	46.03	37.84	8.19	449.50	624.80	8.52	542.34	505.15	0.09

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	519.65	282.32	436.27	1154.89	0.45	2.16	1.89	8.34
MEAN	16.57	529.34	290.07	442.78	1151.34	0.46	2.24	1.97	6.35
HUB	13.89	571.78	353.05	449.77	1147.97	0.50	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	592.64	535.38	310.32	0.46	5333.03	0.92	0.91		
MEAN	520.25	499.04	230.18	0.43	4810.20	0.92	0.91	0.91	1.50
HUB	436.00	457.36	82.96	0.40	4905.94	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.01	1.17	9.60	584.37	1.05	562.67	516.34	0.05
MEAN	10.84	1.15	9.40	581.74	1.04	559.22	515.29	0.06
HUB	10.87	1.16	9.20	582.22	1.04	555.95	515.50	0.06

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.91	35.42	31.50	3.92	0.93	0.41	1.40
MEAN	33.23	27.47	23.50	3.97	0.93	0.40	1.62
HUB	38.13	10.45	6.50	3.95	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	570.2456	291.7061	489.9874	1148.6488	0.4964	-0.1148	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.8945	9.2254	556.6491	515.6903	0.0631	30.7668	32.4000	1.6332

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	485.1283	108.8001	472.7706	1156.0696	0.4196	0.1685	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.8794	9.6532	563.8668	515.6480	432.2457	0.0200	0.3407

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	481.1514	0.0000	481.1514	1156.3621	0.4161	0.2536	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.6488	564.1774	515.5983	0.0000	0.0600	0.0375	0.1656

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8816	10.8529	1.1529	582.7759	25.3083	241.6850	1.8735

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
157513.266	0.448	583.704	618398.563	0.368295E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.251 EfDer = 1.000 SH = 0.368295E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.576	3597.008	10.853	582.776	1.000	1.000	0.980

W Kg/sec = 29.807 Wdry = 65.573 WH2O = 0.002 lbm/sec H2O = 0.028g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
94.147	3393.506	1.381	0.249	53.349	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
82744.711	51453.262	1.849	509.668	275.626	384.739	1.396

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	389.64	-0.13	389.64	0.34	0.60	542.51
MEAN	15.91	0.00	-0.02	389.64	-0.13	389.64	0.34	0.54	
HUB	13.07	0.00	-0.02	389.64	-0.13	389.64	0.34	0.49	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.89	47.36	8.53	575.06	694.74	10.05	570.58	515.59	0.05
MEAN	52.05	44.80	7.25	499.51	633.61	10.05	570.58	515.59	0.05
HUB	46.49	38.84	7.65	410.26	565.90	10.05	570.58	515.59	0.05

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	484.58	280.55	395.11	1181.81	0.41	2.05	1.78	7.43
MEAN	15.50	487.77	277.03	401.47	1177.81	0.41	2.13	1.86	5.75
HUB	12.59	518.80	320.22	408.18	1173.95	0.44	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	563.13	485.76	282.59	0.41	5035.44	0.92	0.91		
MEAN	486.47	452.81	209.44	0.38	4295.44	0.92	0.91	0.91	1.54
HUB	395.20	415.01	74.98	0.35	4033.32	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.51	1.15	11.16	608.17	1.04	589.31	525.35	0.03
MEAN	12.25	1.13	10.90	604.44	1.04	585.33	523.96	0.03
HUB	12.16	1.12	10.65	603.12	1.03	581.49	523.47	0.04

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	35.38	35.57	31.50	4.07	0.93	0.44	1.40
MEAN	34.61	27.55	23.50	4.05	0.93	0.42	1.64
HUB	38.11	10.41	6.50	3.91	0.93	0.40	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	541.2754	282.1099	461.9449	1174.1245	0.4610	-0.1930	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.2785	10.6337	581.7105	524.2151	0.0352	31.4124	33.0000	1.5876

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   466.9533   106.6292   454.6159  1180.1820     0.3957     0.0799     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.2546    11.0167   587.7285   524.1640   410.5396     0.0370     0.3523

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   452.6551     0.0000   452.6551  1181.2173     0.3832     0.2763     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.0881   588.7861   524.1613     0.0000     0.0600     0.0375     0.1309

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8830    12.2540     1.1291   605.2399    22.4648   249.4913     1.9340

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 139876.828       0.441     518.348  629942.688   0.368448E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3098   Tt4 =   605.2399   T1  =   462.0943

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    890558.94   3300.1870    176.0780      2.3714      0.8684      5.6342      1.3098     37.3740
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*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 69.9%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.971   EfDer =  0.999    SH =  0.367065E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      64.442    3567.117       5.167     462.094       1.000       1.000       0.980
  W Kg/sec =  29.292  Wdry =  64.439  WH2O = 0.002  lbm/sec   H2O =   0.017g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     173.033    3779.283       1.381       0.248      53.349      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  137835.656   50563.492       1.642     831.557     506.494     619.754       1.224

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
  TIP     20.63     0.00    -0.02   397.81    -0.14   397.81     0.39     0.73   680.37
  MEAN    17.06     0.00    -0.02   397.81    -0.14   397.81     0.39     0.64
  HUB     12.51     0.00    -0.02   397.81    -0.14   397.81     0.39     0.54

        BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
  TIP     58.23     50.47     7.76   642.19   755.54     4.67   449.37   452.47     2.06
  MEAN    53.17     47.20     5.97   531.06   663.65     4.67   449.37   452.47     2.06
  HUB     44.40     38.62     5.78   389.42   556.79     4.67   449.37   452.47     2.06

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
  TIP     20.63   628.52   362.77   513.26  1053.21      0.60     7.29     6.52    16.04
  MEAN    18.04   661.58   400.20   526.81  1047.83      0.63     7.43     6.80    12.53
  HUB     15.00   760.58   521.89   553.28  1038.43      0.73     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
  TIP    642.19   584.39   279.42     0.55  7486.69      0.92     0.91
  MEAN   561.44   550.93   161.24     0.53  7220.37      0.92     0.91     0.91     1.34
  HUB    466.93   556.00    54.95     0.54  7830.06      0.92     0.91

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
  TIP       6.70     1.30     5.28   499.58     1.08   467.81   476.81     0.98
  MEAN      6.64     1.28     5.09   498.25     1.08   463.05   476.08     1.17
  HUB       6.77     1.31     4.76   501.30     1.08   454.78   478.00     1.62

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
  TIP     35.25    28.56    24.20     4.36     0.93     0.36     1.80
  MEAN    37.22    17.02    12.70     4.32     0.92     0.31     2.22
  HUB     43.33    -5.67    -9.30     3.63     0.92     0.17     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   698.9488   399.4237   573.5766  1044.8517     0.6689    -0.0724     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.6853     4.9695   460.4196   476.9440     1.2943    34.8523    35.4000     0.5477

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   545.3701   133.4142   528.7997  1062.1421     0.5135     0.3206     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.6582     5.5744   475.7899   476.7330   554.9116     0.0263     0.4301

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   541.1669     0.0000   541.1669  1062.5339     0.5093     0.3520     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.5734   476.1592   476.6951     0.0000     0.0600     0.0382     0.3200
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8797     6.6385     1.2847   499.7098    37.6161   217.1702     1.6835

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 233884.547       0.567     851.729  710437.875   0.368670E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.957   EfDer =  1.000    SH =  0.368670E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.442    3567.117       6.638     499.710       1.000       1.000       0.980
 W Kg/sec =  29.292  Wdry =  64.439  WH2O = 0.002  lbm/sec   H2O =   0.019g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    140.061    3634.264       1.381       0.248      53.349      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 119308.070   50563.492       1.440     590.487     409.986     468.502       1.143

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   484.92    -0.17   484.92     0.45     0.75   651.72
 MEAN    18.08     0.00    -0.02   484.92    -0.17   484.92     0.45     0.70
 HUB     15.21     0.00    -0.02   484.92    -0.17   484.92     0.45     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.84    46.36     6.48   639.70   802.86     5.77   480.80   476.66     0.61
 MEAN    49.26    42.30     6.96   562.76   742.99     5.77   480.80   476.66     0.61
 HUB     44.33    37.84     6.49   473.47   677.85     5.77   480.80   476.66     0.61

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   564.39   294.19   481.66  1093.35      0.52     2.33     2.04     9.02
 MEAN    18.01   578.41   306.65   490.43  1089.31      0.53     2.40     2.13     7.35
 HUB     15.22   629.29   382.33   499.83  1085.55      0.58     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    635.65   590.41   341.46     0.54  6010.81      0.92     0.91
 MEAN   560.63   552.29   253.98     0.51  5525.83      0.92     0.91     0.91     1.46
 HUB    473.88   508.15    91.55     0.47  5822.71      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.06     1.21     6.74   529.80     1.06   504.19   492.64     0.28
 MEAN     7.94     1.20     6.57   527.37     1.06   500.47   491.45     0.31
 HUB      8.01     1.21     6.40   528.86     1.06   497.02   492.21     0.35

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.42    35.33    31.50     3.83     0.93     0.40     1.40
 MEAN    32.02    27.38    23.50     3.88     0.93     0.38     1.63
 HUB     37.41    10.38     6.50     3.88     0.93     0.39     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   642.7302   307.5139   564.3911  1083.8267     0.5930    -0.1746     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.9908     6.3168   495.4638   492.1044     0.3634    28.5842    30.6000     2.0158

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   532.9885   112.9973   520.8726  1095.1172     0.4867     0.1557     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.9704     6.7919   505.8374   492.0102   491.5697     0.0241     0.3055

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.8235   556.6851     0.0000   556.6851  1092.8499     0.5094     0.2139     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6748	503.7635	491.9817	0.0000	0.0600	0.0380	0.0742

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8804	7.9505	1.1976	528.6782	28.9688	245.7210	1.9048

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
180170.688	0.446	656.121	637739.500	0.368670E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 7.061 EfDer = 1.000 SH = 0.368670E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.442	3567.117	7.951	528.678	1.000	1.000	0.980

W Kg/sec = 29.292 Wdry = 64.439 WH2O = 0.002 lbm/sec H2O = 0.022g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
120.289	3533.294	1.381	0.248	53.349	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
103628.922	50563.492	1.549	545.479	352.122	424.468	1.205

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	455.95	-0.16	455.95	0.41	0.70	618.82
MEAN	17.74	0.00	-0.02	455.95	-0.16	455.95	0.41	0.65	
HUB	15.05	0.00	-0.02	455.95	-0.16	455.95	0.41	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.88	46.36	7.52	624.76	773.57	7.08	511.97	491.95	0.22
MEAN	50.46	43.40	7.06	552.18	716.22	7.08	511.97	491.95	0.22
HUB	45.79	38.84	6.95	468.49	653.85	7.08	511.97	491.95	0.22

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	542.12	292.09	456.71	1125.18	0.48	2.26	1.98	8.75
MEAN	17.51	554.57	303.82	463.94	1121.56	0.49	2.34	2.07	6.78
HUB	14.85	602.57	374.93	471.72	1118.15	0.54	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	616.66	560.29	324.57	0.50	5789.48	0.92	0.91		
MEAN	544.96	522.86	241.14	0.47	5321.69	0.92	0.91	0.91	1.48
HUB	462.27	479.74	87.34	0.43	5570.07	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.49	1.19	8.11	557.65	1.05	534.03	505.38	0.11
MEAN	9.36	1.18	7.94	555.31	1.05	530.59	504.36	0.13
HUB	9.43	1.19	7.76	556.56	1.05	527.37	504.92	0.14

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.60	35.40	31.50	3.90	0.93	0.41	1.40
MEAN	33.22	27.46	23.50	3.96	0.93	0.40	1.62
HUB	38.48	10.49	6.50	3.99	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	611.7420	305.8172	529.8152	1117.1151	0.5476	-0.1612	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4128	7.6960	526.4280	504.8767	0.1405	29.9942	31.5000	1.5058

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	511.4362	111.5664	499.1192	1126.6848	0.4539	0.1575	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.3950	8.1712	535.4832	504.8141	451.3937	0.0219	0.3270

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	521.6844	0.0000	521.6844	1125.7668	0.4634	0.2378	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1043	534.6345	504.7725	0.0000	0.0600	0.0374	0.1127

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8820	9.3720	1.1788	556.5076	27.8298	235.9462	1.8290

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
173140.000	0.455	630.518	611826.250	0.368670E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.295 EfDer = 1.000 SH = 0.368670E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.442	3567.117	9.372	556.507	1.000	1.000	0.980

W Kg/sec = 29.292 Wdry = 64.439 WH2O = 0.002 lbm/sec H2O = 0.025g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
104.696	3443.816	1.381	0.249	53.349	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
91214.523	50563.492	1.675	513.330	306.491	395.845	1.292

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	426.46	-0.15	426.46	0.38	0.65	578.80
MEAN	16.97	0.00	-0.02	426.46	-0.15	426.46	0.38	0.60	
HUB	14.32	0.00	-0.02	426.46	-0.15	426.46	0.38	0.54	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.58	46.36	8.22	599.54	735.86	8.51	541.89	504.75	0.09
MEAN	51.10	43.80	7.30	528.28	679.05	8.51	541.89	504.75	0.09
HUB	46.28	37.84	8.44	445.77	617.01	8.51	541.89	504.75	0.09

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	513.89	282.45	429.30	1154.18	0.45	2.16	1.89	8.34
MEAN	16.57	523.13	289.56	435.69	1150.64	0.45	2.24	1.97	6.35
HUB	13.89	564.75	350.86	442.53	1147.27	0.49	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	587.71	526.77	305.27	0.46	5335.48	0.92	0.91		
MEAN	515.93	490.98	226.37	0.43	4801.58	0.92	0.91	0.91	1.50
HUB	432.38	449.98	81.52	0.39	4875.55	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.95	1.17	9.57	583.20	1.05	561.98	515.90	0.06
MEAN	10.78	1.15	9.38	580.53	1.04	558.54	514.84	0.06
HUB	10.81	1.15	9.18	580.90	1.04	555.27	514.99	0.07

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.34	35.42	31.50	3.92	0.93	0.42	1.40
MEAN	33.61	27.46	23.50	3.96	0.93	0.41	1.62
HUB	38.41	10.44	6.50	3.94	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	563.0238	291.1856	481.8784	1148.0577	0.4904	-0.1131	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.8324	9.2089	556.0745	515.2230	0.0641	31.1434	32.4000	1.2566

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	477.1283	107.0059	464.9743	1155.4420	0.4129	0.1765	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.8184	9.6348	563.2532	515.1827	432.2457	0.0195	0.3460

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	473.2194	0.0000	473.2194	1155.7242	0.4095	0.2595	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.6302	563.5534	515.1340	0.0000	0.0600	0.0371	0.1733

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8822	10.7924	1.1516	581.5439	25.0371	239.5667	1.8571

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
155824.125	0.451	567.459	607061.688	0.368670E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.452 EfDer = 0.999 SH = 0.368670E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.442	3567.117	10.792	581.544	1.000	1.000	0.980

W Kg/sec = 29.292 Wdry = 64.439 WH2O = 0.002 lbm/sec H2O = 0.028g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
92.939	3368.870	1.381	0.249	53.349	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
81465.781	50563.492	1.873	509.668	272.089	384.739	1.414

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	383.62	-0.13	383.62	0.33	0.59	538.57
MEAN	15.91	0.00	-0.02	383.62	-0.13	383.62	0.33	0.54	
HUB	13.07	0.00	-0.02	383.62	-0.13	383.62	0.33	0.48	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	56.08	47.36	8.72	570.28	687.41	10.02	569.72	515.12	0.05
MEAN	52.25	44.80	7.45	495.36	626.63	10.02	569.72	515.12	0.05
HUB	46.69	38.84	7.85	406.86	559.29	10.02	569.72	515.12	0.05

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	479.62	280.08	389.35	1180.71	0.41	2.05	1.78	7.43
MEAN	15.50	482.40	276.13	395.56	1176.74	0.41	2.13	1.86	5.75
HUB	12.59	512.72	318.09	402.12	1172.91	0.44	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	558.45	478.63	278.38	0.41	5026.98	0.92	0.91		
MEAN	482.42	446.12	206.30	0.38	4281.45	0.92	0.91	0.91	1.55
HUB	391.91	408.84	73.82	0.35	4006.48	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.42	1.15	11.10	606.68	1.04	588.21	524.83	0.03
MEAN	12.17	1.13	10.86	602.96	1.04	584.26	523.43	0.03
HUB	12.08	1.12	10.61	601.58	1.03	580.46	522.92	0.04

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	35.73	35.56	31.50	4.06	0.93	0.45	1.40
MEAN	34.92	27.54	23.50	4.04	0.93	0.42	1.64
HUB	38.35	10.40	6.50	3.90	0.93	0.41	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	534.7756	281.1927	454.8798	1173.1803	0.4558	-0.1910	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.1954	10.5950	580.7713	523.6850	0.0360	31.7231	33.0000	1.2769

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   459.7983   104.9953   447.6499  1179.2130     0.3899     0.0880     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.1731    10.9765   586.7603   523.6367   410.5396     0.0363     0.3566

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   445.8129     0.0000   445.8129  1180.2103     0.3777     0.2810     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.0447   587.7789   523.6331     0.0000     0.0600     0.0372     0.1379

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8834    12.1719     1.1278   603.7394    22.1963   247.7261     1.9204

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 138202.250       0.443     503.286  619024.500   0.368823E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3065   Tt4 =   603.7394   T1  =   462.0942

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    881221.63   3209.1138    173.0331      2.3556      0.8699      5.9706      1.3065     37.3740
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100µm, ISA +36R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.965   EfDer =  0.985    SH =  0.897218E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     73.939    3973.479       5.167     482.274       1.000       1.000       0.980
  W Kg/sec =  33.608  Wdry =  73.932  WH2O = 0.007  lbm/sec   H2O =   0.037g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    202.826    4120.801       1.381       0.248      53.351      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 171035.109   58013.906       1.401     831.557     593.718     619.754       1.044

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   493.63    -0.17   493.63     0.47     0.83   741.85
 MEAN    17.06     0.00    -0.02   493.63    -0.17   493.63     0.47     0.74
 HUB     12.51     0.00    -0.02   493.63    -0.17   493.63     0.47     0.63

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.40     50.47     4.93   715.35   869.28      4.45   462.68   465.16     2.54
 MEAN    50.16     47.20     2.96   591.56   770.60      4.45   462.68   465.16     2.54
 HUB     41.32     38.62     2.70   433.79   657.26      4.45   462.68   465.16     2.54

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   741.45   362.62   646.73  1066.62      0.70     7.29     6.52    16.04
 MEAN    18.04   787.16   421.44   664.84  1061.11      0.74     7.43     6.80    12.53
 HUB     15.00   929.01   591.97   715.98  1047.10      0.89     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    715.35   736.66   352.73     0.69  7484.40      0.92     0.90
 MEAN   625.40   695.42   203.96     0.66  7604.03      0.92     0.90     0.90     1.21
 HUB    520.13   719.57    71.85     0.69  8881.72      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.78     1.31     4.93   524.02     1.09   479.80   488.31     1.32
 MEAN     6.81     1.32     4.75   524.68     1.09   474.85   488.79     1.57
 HUB      7.12     1.38     4.29   531.81     1.10   462.40   492.93     2.49

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.28    28.61    24.20     4.41     0.93     0.27     1.80
 MEAN    32.37    17.06    12.70     4.36     0.91     0.22     2.22
 HUB     39.58    -5.73    -9.30     3.57     0.91     0.07     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.985       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   850.0397   420.6230   738.6771  1054.2437     0.8063    -0.1058     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.8829     4.5074   468.7258   490.0532     1.9615    29.6584    35.4000     5.7416

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   691.6898   169.2084   670.6737  1076.0887     0.6428     0.2316     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.8126     5.1763   488.3607   489.3307   554.9116     0.0412     0.3614

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
    18.0829   693.1922     0.0000   693.1922  1075.8815     0.6443     0.2573     1.3089
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.1187	488.1987	489.1814	0.0000	0.0600	0.0712	0.2060

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8262	6.7452	1.3054	526.8347	44.5608	237.3056	1.8396

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
277084.219	0.541	1157.753	817719.188	0.902295E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.611 EfDer = 0.990 SH = 0.903139E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.939	3973.479	6.745	526.835	1.000	1.000	0.980

W Kg/sec = 33.608 Wdry = 73.932 WH2O = 0.007 lbm/sec H2O = 0.043g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
162.396	3942.683	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
149454.781	58013.898	1.242	590.487	475.379	468.502	0.986

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	607.45	-0.21	607.45	0.56	0.86	707.03
MEAN	18.08	0.00	-0.02	607.45	-0.21	607.45	0.56	0.80	
HUB	15.21	0.00	-0.02	607.45	-0.21	607.45	0.56	0.74	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.56	46.36	3.20	712.57	936.51	5.47	497.17	489.04	0.72
MEAN	45.91	42.30	3.61	626.87	873.05	5.47	497.17	489.04	0.72
HUB	40.98	37.84	3.14	527.41	804.60	5.47	497.17	489.04	0.72

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	660.23	282.69	596.65	1114.62	0.59	2.33	2.04	9.02
MEAN	18.01	680.32	308.21	606.50	1110.99	0.61	2.40	2.13	7.35
HUB	15.22	742.70	412.87	617.36	1107.74	0.67	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	708.07	732.75	425.37	0.66	5776.93	0.92	0.91		
MEAN	624.50	684.02	316.29	0.62	5554.64	0.92	0.91	0.91	1.37
HUB	527.86	627.98	114.99	0.57	6288.34	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.20	1.22	6.49	559.05	1.06	524.00	503.42	0.32
MEAN	8.14	1.21	6.34	557.81	1.06	520.59	502.93	0.35
HUB	8.34	1.24	6.19	561.90	1.07	517.55	504.71	0.38

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.35	35.49	31.50	3.99	0.93	0.33	1.40
MEAN	26.94	27.54	23.50	4.04	0.92	0.32	1.63
HUB	33.77	10.55	6.50	4.05	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.990	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	779.0581	309.0756	715.1251	1100.4442	0.7079	-0.2339	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2074	5.8972	510.7946	503.7718	0.4620	23.3739	30.6000	7.2261

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	672.5429	142.5839	657.2548	1113.7645	0.6038	0.0264	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.1491	6.3883	523.2208	503.4864	491.5697	0.0409	0.2242

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	715.2482	0.0000	715.2482	1108.6603	0.6451	0.1028	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.1347	518.4616	503.4027	0.0000	0.0600	0.0725	-0.1078

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8274	8.0894	1.1993	559.5825	32.7480	279.3839	2.1658

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
203721.531	0.406	851.218	740140.375	0.903604E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.984 EfDer = 0.992 SH = 0.903604E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.939	3973.479	8.089	559.582	1.000	1.000	0.980

W Kg/sec = 33.608 Wdry = 73.932 WH2O = 0.007 lbm/sec H2O = 0.050g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
139.555	3825.578	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
128663.164	58013.895	1.335	545.479	408.538	424.468	1.039

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	566.09	-0.19	566.09	0.50	0.80	670.01
MEAN	17.74	0.00	-0.02	566.09	-0.19	566.09	0.50	0.74	
HUB	15.05	0.00	-0.02	566.09	-0.19	566.09	0.50	0.68	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.88	46.36	4.52	695.93	897.25	6.82	533.83	503.26	0.24
MEAN	47.38	43.40	3.98	615.08	836.08	6.82	533.83	503.26	0.24
HUB	42.68	38.84	3.84	521.86	770.07	6.82	533.83	503.26	0.24

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	630.13	285.76	561.61	1151.41	0.55	2.26	1.98	8.75
MEAN	17.51	648.27	309.02	569.87	1148.04	0.56	2.34	2.07	6.78
HUB	14.85	707.24	406.13	579.00	1144.98	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	686.91	690.16	401.15	0.60	5664.90	0.92	0.91		
MEAN	607.04	643.10	298.02	0.56	5413.30	0.92	0.91	0.91	1.40
HUB	514.93	589.13	108.79	0.51	6034.02	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.70	1.20	7.93	591.16	1.06	559.24	515.74	0.12
MEAN	9.62	1.19	7.77	589.75	1.05	555.98	515.22	0.13
HUB	9.81	1.21	7.61	593.21	1.06	553.01	516.55	0.14

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.97	35.54	31.50	4.04	0.93	0.34	1.40
MEAN	28.47	27.61	23.50	4.11	0.92	0.34	1.62
HUB	35.05	10.64	6.50	4.14	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	730.5581	311.0457	661.0339	1140.2324	0.6407	-0.2031	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.6880	7.3742	548.4911	515.8463	0.1594	25.1991	31.5000	6.3009

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	637.6495	139.0989	622.2928	1150.8127	0.5541	0.0405	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.6409	7.8460	558.7028	515.6786	451.3937	0.0342	0.2569

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	654.7361	0.0000	654.7361	1148.9556	0.5699	0.1487	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.7183	556.9334	515.5870	0.0000	0.0600	0.0584	-0.0253

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8480	9.5940	1.1860	591.3747	31.7926	264.9568	2.0539

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
197864.688	0.419	826.747	700090.000	0.904037E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 4.566 EfDer = 0.995 SH = 0.904037E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
73.939	3973.479	9.594	591.375	1.000	1.000	0.980

W Kg/sec = 33.608 Wdry = 73.932 WH2O = 0.007 lbm/sec H2O = 0.058g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
120.966	3721.326	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
111915.844	58013.898	1.450	513.330	354.143	395.845	1.118

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	523.25	-0.18	523.25	0.45	0.73	625.44
MEAN	16.97	0.00	-0.02	523.25	-0.18	523.25	0.45	0.68	
HUB	14.32	0.00	-0.02	523.25	-0.18	523.25	0.45	0.62	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.93	46.36	5.57	667.84	848.55	8.36	569.38	515.53	0.10
MEAN	48.37	43.80	4.57	588.46	787.58	8.36	569.38	515.53	0.10
HUB	43.51	37.84	5.67	496.55	721.47	8.36	569.38	515.53	0.10

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	593.30	281.80	522.11	1185.29	0.50	2.16	1.89	8.34
MEAN	16.57	607.85	297.99	529.80	1181.76	0.51	2.24	1.97	6.35
HUB	13.89	659.53	381.29	538.15	1178.47	0.56	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	654.67	641.58	372.87	0.54	5323.81	0.92	0.91		
MEAN	574.70	597.71	276.72	0.51	4941.83	0.92	0.91	0.91	1.42
HUB	481.64	547.42	100.34	0.46	5298.77	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.28	1.18	9.53	621.03	1.05	592.76	526.20	0.06
MEAN	11.15	1.16	9.33	618.90	1.05	589.22	525.47	0.06
HUB	11.27	1.17	9.14	620.89	1.05	585.95	526.18	0.07

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	28.36	35.53	31.50	4.03	0.93	0.36	1.40
MEAN	29.36	27.58	23.50	4.08	0.92	0.36	1.62
HUB	35.32	10.56	6.50	4.06	0.92	0.38	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	662.0808	299.6611	590.3848	1177.5209	0.5623	-0.1357	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
11.2162	9.0742	585.0746	525.9277	0.0672	26.9109	32.4000	5.4891

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   585.2230   131.2484   570.3155  1185.2461     0.4938     0.0807     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    11.1816    9.4855   592.7725   525.8286   432.2457     0.0282     0.2863

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   580.5613     0.0000   580.5613  1185.6521     0.4897     0.1898     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.4807   593.2126   525.7549     0.0000     0.0600     0.0468     0.0782

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8636    11.1462     1.1618   620.2761    28.9020   265.3154     2.0567

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 179974.078       0.420     751.993  685985.188   0.904473E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.153   EfDer =  0.997    SH =  0.904473E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     73.939    3973.479      11.146     620.276       1.000       1.000       0.980
 W Kg/sec =  33.608  Wdry =  73.932  WH2O = 0.007  lbm/sec   H2O =   0.065g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    106.634    3633.595       1.380       0.249      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  98516.492   58013.895       1.632     509.668     312.212     384.739       1.232

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   463.91    -0.16   463.91     0.39     0.66   580.89
 MEAN    15.91     0.00    -0.02   463.91    -0.16   463.91     0.39     0.60
 HUB     13.07     0.00    -0.02   463.91    -0.16   463.91     0.39     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.87    47.36     6.51   635.25   786.74    10.06   603.00   525.73     0.05
 MEAN    49.95    44.80     5.15   551.79   721.01    10.06   603.00   525.73     0.05
 HUB     44.34    38.84     5.50   453.20   648.65    10.06   603.00   525.73     0.05

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   548.00   287.03   466.82  1216.81      0.45     2.05     1.78     7.43
 MEAN    15.50   555.70   288.71   474.81  1212.48      0.46     2.13     1.86     5.75
 HUB     12.59   594.95   347.02   483.26  1208.35      0.49     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    622.07   574.60   335.04     0.47  5152.30      0.92     0.91
 MEAN   537.38   535.99   248.67     0.44  4476.82      0.92     0.91     0.91     1.47
 HUB    436.56   491.49    89.54     0.41  4371.01      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.95     1.16    11.29   648.96     1.05   624.85   535.35     0.03
 MEAN    12.70     1.14    11.02   645.20     1.04   620.41   534.13     0.03
 HUB     12.66     1.14    10.75   644.61     1.04   616.20   533.95     0.04

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.59    35.67    31.50     4.17     0.93     0.40     1.40
 MEAN    31.30    27.64    23.50     4.14     0.92     0.38     1.64
 HUB     35.68    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   623.9541   294.0019   550.3468  1207.1251     0.5169    -0.2161     2.0437
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    Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
   12.7371    10.6404   615.0118   534.4249     0.0365    28.1117    33.0000     4.8883

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   557.6608   127.3423   542.9268  1213.2852     0.4596    -0.0139     2.1315

   BlockageTh  PtTh       PsTh       TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.6853    10.9956   621.2975   534.3098   410.5396     0.0495     0.3066

    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   538.9975     0.0000   538.9975  1214.8573     0.4437     0.2235     0.5109

   Blockage4   Ps4       Ts4        TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.1089   622.9433   534.3220     0.0000     0.0600     0.0447     0.0508

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
    0.8706    12.6938     1.1388   646.2559    25.9807   269.5089     2.0892

Del Enthalpy   Del_H/U^2    GHP       Reynolds#        SH
 161885.266       0.418     676.412  691053.000   0.904980E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3400   Tt4 =   646.2559   T1  =   482.2743

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
   1020529.75   4264.1230    202.8258      2.4566      0.8273      2.9646      1.3400     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 75.6%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.307   EfDer =  0.998    SH =  0.900838E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      65.277    3704.934       5.167     482.274       1.000       1.000       0.980
  W Kg/sec =  29.672  Wdry =  65.272  WH2O = 0.006  lbm/sec   H2O =   0.039g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     179.066    3842.299       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 146647.234   51218.059       1.586     831.557     524.171     619.754       1.182

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   423.25    -0.15   423.25     0.40     0.75   691.71
 MEAN    17.06     0.00    -0.02   423.25    -0.15   423.25     0.40     0.66
 HUB     12.51     0.00    -0.02   423.25    -0.15   423.25     0.40     0.56

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.61    50.47     7.14   667.00   790.08     4.63   467.87   465.06     2.09
 MEAN    52.51    47.20     5.31   551.58   695.37     4.63   467.87   465.06     2.09
 HUB     43.71    38.62     5.09   404.47   585.53     4.63   467.87   465.06     2.09

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   659.85   369.02   547.01  1074.43      0.61     7.29     6.52    16.04
 MEAN    18.04   696.00   411.09   561.62  1068.93      0.65     7.43     6.80    12.53
 HUB     15.00   803.67   543.77   591.78  1058.75      0.76     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    667.00   622.91   297.98     0.58  7615.95      0.92     0.91
 MEAN   583.13   587.38   172.04     0.55  7417.00      0.92     0.91     0.91     1.31
 HUB    484.97   594.70    58.79     0.56  8158.33      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.22   521.88     1.08   486.86   487.13     1.04
 MEAN     6.67     1.29     5.03   520.84     1.08   481.89   486.70     1.24
 HUB      6.84     1.32     4.69   524.70     1.09   472.76   488.92     1.71

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.00    28.58    24.20     4.38     0.93     0.34     1.80
 MEAN    36.20    17.03    12.70     4.33     0.92     0.29     2.22
 HUB     42.58    -5.67    -9.30     3.63     0.92     0.15     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   737.7123   410.2960   613.0878  1065.3943     0.6924    -0.0775     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7224     4.8967   478.7084   487.5707     1.3817    33.7916    35.4000     1.6084

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   581.4529   142.2411   563.7863  1083.6749     0.5366     0.3031     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6910     5.5135   495.2854   487.1888   554.9116     0.0278     0.4162

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   577.3900     0.0000   577.3900  1084.0654     0.5326     0.3351     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5085   495.6672   487.1297     0.0000     0.0600     0.0418     0.3003
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8741     6.6665     1.2902   522.4709    40.1975   221.3351     1.7158

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 249973.344       0.562     922.123  701120.500   0.907373E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.281   EfDer =  1.000    SH =  0.910017E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     65.277    3704.934       6.666     522.471       1.000       1.000       0.980
 W Kg/sec =  29.672  Wdry =  65.271  WH2O = 0.006  lbm/sec   H2O =   0.045g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    144.463    3691.540       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 126905.984   51218.039       1.396     590.487     422.889     468.502       1.108

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   515.80    -0.18   515.80     0.47     0.77   661.99
 MEAN   18.08     0.00    -0.02   515.80    -0.18   515.80     0.47     0.72
 HUB    15.21     0.00    -0.02   515.80    -0.18   515.80     0.47     0.65

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    52.18    46.36     5.82   664.42   841.27     5.73   501.08   487.07     0.65
 MEAN   48.58    42.30     6.28   584.50   779.68     5.73   501.08   487.07     0.65
 HUB    43.64    37.84     5.80   491.76   712.78     5.73   501.08   487.07     0.65

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   591.36   297.50   511.08  1116.69     0.53     2.33     2.04     9.02
 MEAN   18.01   606.94   312.47   520.33  1112.61     0.55     2.40     2.13     7.35
 HUB    15.22   661.04   394.75   530.24  1108.84     0.60     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   660.21   626.71   362.71     0.56  6078.68     0.92     0.91
 MEAN  582.29   586.12   269.82     0.53  5630.86     0.92     0.91     0.91     1.44
 HUB   492.18   539.12    97.44     0.49  6011.96     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     8.10     1.22     6.71   554.07     1.06   525.96   501.58     0.31
 MEAN    7.99     1.20     6.54   551.74     1.06   522.13   500.59     0.34
 HUB     8.09     1.21     6.38   553.72     1.06   518.59   501.50     0.38

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    30.20    35.36    31.50     3.86     0.93     0.38     1.40
 MEAN   30.99    27.41    23.50     3.91     0.93     0.37     1.63
 HUB    36.67    10.41     6.50     3.91     0.93     0.38     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   677.6141   313.3513  600.8093  1106.3220     0.6125    -0.1838     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.0442     6.2634   516.2715   501.2531     0.4047    27.5442    30.6000     3.0558

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   566.9032   120.1875   554.0164  1118.1306     0.5070     0.1325     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     8.0198     6.7437   527.3459   501.0929   491.5697     0.0261     0.2906

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   593.0759     0.0000   593.0759  1115.5172     0.5317     0.1963     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6130	524.9089	501.0640	0.0000	0.0600	0.0406	0.0464

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8766	7.9977	1.1997	553.1797	30.7092	251.8978	1.9527

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
191044.125	0.438	704.740	630216.000	0.910659E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.474 EfDer = 1.000 SH = 0.910659E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.277	3704.934	7.998	553.180	1.000	1.000	0.980

W Kg/sec = 29.672 Wdry = 65.271 WH2O = 0.006 lbm/sec H2O = 0.052g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
123.905	3587.612	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
109895.930	51218.039	1.504	545.479	362.725	424.468	1.170

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	483.52	-0.17	483.52	0.43	0.72	628.33
MEAN	17.74	0.00	-0.02	483.52	-0.17	483.52	0.43	0.67	
HUB	15.05	0.00	-0.02	483.52	-0.17	483.52	0.43	0.61	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.32	46.36	6.96	648.90	809.37	7.06	534.39	500.99	0.24
MEAN	49.87	43.40	6.47	573.51	750.27	7.06	534.39	500.99	0.24
HUB	45.19	38.84	6.35	486.59	686.09	7.06	534.39	500.99	0.24

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	567.09	296.71	483.27	1150.02	0.49	2.26	1.98	8.75
MEAN	17.51	580.90	310.58	490.91	1146.34	0.51	2.34	2.07	6.78
HUB	14.85	631.88	387.47	499.13	1142.89	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	640.49	593.07	343.78	0.52	5881.21	0.92	0.91		
MEAN	566.02	553.39	255.43	0.48	5440.17	0.92	0.91	0.91	1.47
HUB	480.13	507.66	92.65	0.44	5756.44	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.56	1.20	8.12	583.74	1.06	557.90	513.46	0.13
MEAN	9.44	1.18	7.94	581.45	1.05	554.33	512.58	0.14
HUB	9.53	1.19	7.76	583.09	1.05	551.01	513.25	0.16

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.55	35.43	31.50	3.93	0.93	0.40	1.40
MEAN	32.32	27.49	23.50	3.99	0.93	0.39	1.62
HUB	37.82	10.52	6.50	4.02	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	642.9754	312.6195	561.8598	1141.3281	0.5634	-0.1678	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4937	7.6742	549.5450	513.0925	0.1617	29.0916	31.5000	2.4084

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	542.1503	118.2664	529.0935	1151.2593	0.4709	0.1373	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4728	8.1535	559.1454	512.9935	451.3937	0.0233	0.3143

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	553.3060	0.0000	553.3060	1150.2192	0.4810	0.2237	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.0812	558.1668	512.9470	0.0000	0.0600	0.0386	0.0912

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8800	9.4488	1.1814	582.7626	29.5834	240.9948	1.8682

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
184114.906	0.449	679.179	603155.063	0.911247E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.798 EfDer = 1.000 SH = 0.911247E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.277	3704.934	9.449	582.763	1.000	1.000	0.980

W Kg/sec = 29.672 Wdry = 65.271 WH2O = 0.006 lbm/sec H2O = 0.059g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
107.645	3495.367	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
96433.203	51218.035	1.629	513.330	315.144	395.845	1.256

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	450.86	-0.16	450.86	0.39	0.66	587.47
MEAN	16.97	0.00	-0.02	450.86	-0.16	450.86	0.39	0.61	
HUB	14.32	0.00	-0.02	450.86	-0.16	450.86	0.39	0.56	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.10	46.36	7.74	622.71	768.92	8.52	566.43	512.91	0.11
MEAN	50.60	43.80	6.80	548.69	710.29	8.52	566.43	512.91	0.11
HUB	45.77	37.84	7.93	462.99	646.36	8.52	566.43	512.91	0.11

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	536.83	288.08	452.98	1180.41	0.45	2.16	1.89	8.34
MEAN	16.57	547.22	296.76	459.77	1176.78	0.47	2.24	1.97	6.35
HUB	13.89	591.43	362.85	467.04	1173.34	0.50	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	610.42	555.97	322.34	0.47	5441.90	0.92	0.91		
MEAN	535.86	518.22	239.10	0.44	4921.02	0.92	0.91	0.91	1.49
HUB	449.09	474.93	86.23	0.40	5042.27	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.06	1.17	9.61	611.03	1.05	587.88	523.44	0.07
MEAN	10.90	1.15	9.41	608.32	1.04	584.27	522.47	0.07
HUB	10.94	1.16	9.21	608.95	1.04	580.86	522.71	0.08

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.45	35.44	31.50	3.94	0.93	0.41	1.40
MEAN	32.84	27.48	23.50	3.98	0.93	0.40	1.62
HUB	37.84	10.46	6.50	3.96	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	590.0931	298.4244	509.0705	1173.9036	0.5027	-0.1166	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.9487	9.2336	581.4711	522.8550	0.0761	30.3794	32.4000	2.0206

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	504.0080	113.0343	491.1693	1181.5120	0.4266	0.1602	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.9325	9.6624	589.0352	522.7950	432.2457	0.0205	0.3352

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	499.8763	0.0000	499.8763	1181.8158	0.4230	0.2476	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.6582	589.3709	522.7390	0.0000	0.0600	0.0380	0.1574

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8808	10.9053	1.1542	609.4354	26.6735	243.8912	1.8906

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
166086.563	0.446	612.674	597183.750	0.912122E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.043 EfDer = 1.000 SH = 0.912167E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
65.277	3704.934	10.905	609.435	1.000	1.000	0.980

W Kg/sec = 29.672 Wdry = 65.271 WH2O = 0.006 lbm/sec H2O = 0.067g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
95.378	3418.021	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
85869.484	51218.043	1.825	509.668	279.251	384.739	1.378

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	404.35	-0.14	404.35	0.34	0.60	546.43
MEAN	15.91	0.00	-0.02	404.35	-0.14	404.35	0.34	0.55	
HUB	13.07	0.00	-0.02	404.35	-0.14	404.35	0.34	0.49	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.69	47.36	8.33	592.32	717.29	10.08	596.31	522.72	0.06
MEAN	51.84	44.80	7.04	514.49	654.48	10.08	596.31	522.72	0.06
HUB	46.27	38.84	7.43	422.57	584.97	10.08	596.31	522.72	0.06

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	500.15	286.92	409.67	1208.27	0.41	2.05	1.78	7.43
MEAN	15.50	503.84	283.78	416.32	1204.16	0.42	2.13	1.86	5.75
HUB	12.59	536.29	329.22	423.34	1200.19	0.45	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	580.03	503.73	293.11	0.42	5149.95	0.92	0.91		
MEAN	501.06	469.61	217.28	0.39	4400.14	0.92	0.91	0.91	1.53
HUB	407.06	430.44	77.84	0.36	4146.69	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.58	1.15	11.20	636.17	1.04	616.09	532.01	0.04
MEAN	12.32	1.13	10.94	632.28	1.04	611.90	530.70	0.04
HUB	12.24	1.12	10.69	630.96	1.04	607.87	530.26	0.04

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	35.01	35.58	31.50	4.08	0.93	0.44	1.40
MEAN	34.28	27.56	23.50	4.06	0.93	0.41	1.64
HUB	37.87	10.42	6.50	3.92	0.93	0.40	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	559.7060	288.9846	479.3315	1200.2517	0.4663	-0.1950	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.3519	10.6626	607.9922	530.9499	0.0439	31.0854	33.0000	1.9146

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   484.5659   110.6510   471.7632  1206.4524     0.4016     0.0714     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.3262    11.0459   614.2903   530.8844   410.5396     0.0378     0.3477

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   469.6224     0.0000   469.6224  1207.5450     0.3889     0.2712     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.1208   615.4370   530.8816     0.0000     0.0600     0.0379     0.1234

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8824    12.3262     1.1303   633.1369    23.7023   251.3574     1.9485

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 147666.469       0.439     544.725  607700.438   0.913236E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3128   Tt4 =   633.1369   T1  =   482.2739

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    938885.38   3463.4404    179.0664      2.3855      0.8662      5.3072      1.3128     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 72.7%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.648   EfDer =  0.999    SH =  0.901338E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      64.164    3675.064       5.167     482.274       1.000       1.000       0.980
  W Kg/sec =  29.165  Wdry =  64.158  WH2O = 0.006  lbm/sec   H2O =   0.039g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     176.012    3811.322       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 143680.688   50344.387       1.614     831.557     515.230     619.754       1.203

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   414.68    -0.14   414.68     0.39     0.74   686.13
 MEAN    17.06     0.00    -0.02   414.68    -0.14   414.68     0.39     0.65
 HUB     12.51     0.00    -0.02   414.68    -0.14   414.68     0.39     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.93     50.47     7.46   661.62   780.96      4.65   468.45   465.06     2.05
 MEAN    52.85     47.20     5.65   547.14   686.64      4.65   468.45   465.06     2.05
 HUB     44.06     38.62     5.44   401.21   577.10      4.65   468.45   465.06     2.05

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   650.82   370.08   535.36  1075.25      0.61     7.29     6.52    16.04
 MEAN    18.04   685.77   410.15   549.60  1069.75      0.64     7.43     6.80    12.53
 HUB     15.00   790.06   538.48   578.13  1059.87      0.75     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    661.62   609.59   291.54     0.57  7637.69      0.92     0.91
 MEAN   578.43   574.78   168.28     0.54  7399.91      0.92     0.91     0.91     1.33
 HUB    481.06   580.97    57.41     0.55  8078.93      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.30     5.25   521.67     1.08   487.61   487.01     1.02
 MEAN     6.65     1.29     5.06   520.44     1.08   482.62   486.48     1.21
 HUB      6.80     1.32     4.72   523.94     1.09   473.75   488.51     1.65

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.66    28.57    24.20     4.37     0.93     0.35     1.80
 MEAN    36.73    17.02    12.70     4.32     0.92     0.30     2.22
 HUB     42.97    -5.67    -9.30     3.63     0.92     0.16     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   725.6160   409.3535   599.1230  1066.4725     0.6804    -0.0748     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7048     4.9354   479.6794   487.3197     1.3369    34.3430    35.4000     1.0570

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   568.9033   139.1711   551.6179  1084.4479     0.5246     0.3123     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6758     5.5469   495.9937   486.9605   554.9116     0.0270     0.4235

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   564.6969     0.0000   564.6969  1084.8433     0.5205     0.3441     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5442   496.3801   486.9075     0.0000     0.0600     0.0398     0.3108
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8772     6.6539     1.2877   522.0181    39.7448   219.1714     1.6990

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 247159.781       0.565     896.192  686937.563   0.908100E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.637   EfDer =  1.000    SH =  0.911773E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.164    3675.064       6.654     522.018       1.000       1.000       0.980
 W Kg/sec =  29.165  Wdry =  64.158  WH2O = 0.006  lbm/sec   H2O =   0.045g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    142.205    3663.366       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 124317.094   50344.363       1.418     590.487     416.279     468.502       1.125

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   505.28    -0.17   505.28     0.46     0.76   656.94
 MEAN    18.08     0.00    -0.02   505.28    -0.17   505.28     0.46     0.71
 HUB     15.21     0.00    -0.02   505.28    -0.17   505.28     0.46     0.64

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.53    46.36     6.17   659.06   830.60     5.75   501.49   486.85     0.65
 MEAN    48.94    42.30     6.64   579.79   769.20     5.75   501.49   486.85     0.65
 HUB     44.00    37.84     6.16   487.80   702.44     5.75   501.49   486.85     0.65

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   583.81   299.38   501.20  1116.90     0.52     2.33     2.04     9.02
 MEAN    18.01   598.74   313.14   510.32  1112.79     0.54     2.40     2.13     7.35
 HUB     15.22   651.76   392.80   520.10  1108.97     0.59     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    654.89   614.48   355.51     0.55  6116.99     0.92     0.91
 MEAN   577.60   574.77   264.45     0.52  5642.84     0.92     0.91     0.91     1.45
 HUB    488.22   528.78    95.41     0.48  5982.28     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.09     1.22     6.73   553.56     1.06   526.16   501.38     0.31
 MEAN     7.97     1.20     6.56   551.12     1.06   522.30   500.33     0.34
 HUB      8.05     1.21     6.39   552.87     1.06   518.72   501.14     0.38

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     30.85    35.35    31.50     3.85     0.93     0.39     1.40
 MEAN    31.53    27.39    23.50     3.89     0.93     0.38     1.63
 HUB     37.06    10.40     6.50     3.90     0.93     0.39     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   666.7773   314.0220   588.2024  1106.8636     0.6024    -0.1789     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.0207     6.2947   516.7776   500.9747     0.4001    28.0963    30.6000     2.5037

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   555.2038   117.7072   542.5829  1118.5430     0.4964     0.1450     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     7.9985     6.7733   527.7363   500.8232   491.5697     0.0250     0.2987

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   580.2643     0.0000   580.2643  1116.0930     0.5199     0.2062     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6506	525.4521	500.7966	0.0000	0.0600	0.0388	0.0619

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8792	7.9782	1.1990	552.5146	30.4969	248.5946	1.9271

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
189724.063	0.442	687.932	617129.375	0.912479E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.792 EfDer = 1.000 SH = 0.912479E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.164	3675.064	7.978	552.515	1.000	1.000	0.980

W Kg/sec = 29.165 Wdry = 64.158 WH2O = 0.006 lbm/sec H2O = 0.052g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
122.015	3560.830	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
107788.289	50344.367	1.527	545.479	357.194	424.468	1.188

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	474.25	-0.16	474.25	0.42	0.71	623.64
MEAN	17.74	0.00	-0.02	474.25	-0.16	474.25	0.42	0.66	
HUB	15.05	0.00	-0.02	474.25	-0.16	474.25	0.42	0.60	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.62	46.36	7.26	643.66	799.64	7.07	534.44	500.73	0.24
MEAN	50.19	43.40	6.79	568.89	740.77	7.07	534.44	500.73	0.24
HUB	45.51	38.84	6.67	482.67	676.78	7.07	534.44	500.73	0.24

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	560.27	297.98	474.46	1149.85	0.49	2.26	1.98	8.75
MEAN	17.51	573.51	310.81	481.99	1146.14	0.50	2.34	2.07	6.78
HUB	14.85	623.49	385.42	490.09	1142.67	0.55	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	635.33	582.16	337.34	0.51	5906.31	0.92	0.91		
MEAN	561.45	543.26	250.64	0.47	5444.09	0.92	0.91	0.91	1.48
HUB	476.25	498.44	90.83	0.44	5725.94	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.54	1.20	8.12	582.96	1.06	557.73	513.19	0.13
MEAN	9.41	1.18	7.94	580.58	1.05	554.14	512.27	0.15
HUB	9.48	1.19	7.77	582.03	1.05	550.79	512.86	0.16

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.13	35.41	31.50	3.91	0.93	0.40	1.40
MEAN	32.82	27.48	23.50	3.98	0.93	0.40	1.62
HUB	38.18	10.50	6.50	4.00	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	633.6123	312.8485	550.9904	1141.3845	0.5551	-0.1642	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4599	7.6929	549.5990	512.7682	0.1622	29.5876	31.5000	1.9124

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	531.7227	115.9917	518.9171	1151.2521	0.4619	0.1485	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.4407	8.1715	559.1389	512.6740	451.3937	0.0225	0.3214

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	542.5060	0.0000	542.5060	1150.2648	0.4716	0.2316	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1021	558.2114	512.6284	0.0000	0.0600	0.0379	0.1032

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8812	9.4172	1.1804	581.8563	29.3422	238.2065	1.8466

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
182613.891	0.452	662.151	591383.188	0.913114E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.075 EfDer = 1.000 SH = 0.913114E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
64.164	3675.064	9.417	581.856	1.000	1.000	0.980

W Kg/sec = 29.165 Wdry = 64.158 WH2O = 0.006 lbm/sec H2O = 0.060g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
106.081	3469.886	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
94715.336	50344.363	1.653	513.330	310.565	395.845	1.275

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	442.83	-0.15	442.83	0.38	0.66	583.18
MEAN	16.97	0.00	-0.02	442.83	-0.15	442.83	0.38	0.61	
HUB	14.32	0.00	-0.02	442.83	-0.15	442.83	0.38	0.55	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.37	46.36	8.01	617.69	760.15	8.53	566.10	512.59	0.11
MEAN	50.88	43.80	7.08	544.27	701.78	8.53	566.10	512.59	0.11
HUB	46.05	37.84	8.21	459.26	638.09	8.53	566.10	512.59	0.11

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	530.72	288.74	445.30	1179.86	0.45	2.16	1.89	8.34
MEAN	16.57	540.59	296.60	451.96	1176.23	0.46	2.24	1.97	6.35
HUB	13.89	583.92	360.82	459.11	1172.78	0.50	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	605.50	546.47	316.76	0.46	5454.43	0.92	0.91		
MEAN	531.54	509.38	234.94	0.43	4918.37	0.92	0.91	0.91	1.50
HUB	445.47	466.85	84.65	0.40	5013.93	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	11.02	1.17	9.60	609.96	1.05	587.33	523.09	0.07
MEAN	10.85	1.15	9.40	607.20	1.04	583.72	522.10	0.07
HUB	10.88	1.16	9.20	607.69	1.04	580.30	522.30	0.08

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.96	35.43	31.50	3.93	0.93	0.42	1.40
MEAN	33.27	27.47	23.50	3.97	0.93	0.40	1.62
HUB	38.16	10.45	6.50	3.95	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	582.3169	298.2663	500.1302	1173.4803	0.4962	-0.1146	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.9001	9.2317	581.0500	522.4791	0.0771	30.8109	32.4000	1.5891

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	495.1362	111.0446	482.5235	1181.0708	0.4192	0.1695	2.2705

```
   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.8851     9.6606   588.5941   522.4217   432.2457     0.0199     0.3414

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   491.0772     0.0000   491.0772  1181.3632     0.4157     0.2544     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6561   588.9180   522.3671     0.0000     0.0600     0.0375     0.1666

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8816    10.8586     1.1531   608.2825    26.4269   241.4381     1.8716

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 164549.484       0.449     596.650  586171.875   0.914196E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.279   EfDer =  1.000    SH =  0.914290E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     64.164    3675.064      10.859     608.282       1.000       1.000       0.980
 W Kg/sec =  29.165  Wdry =  64.158  WH2O = 0.006  lbm/sec   H2O =   0.067g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     94.065    3393.676       1.381       0.249      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  84457.164   50344.359       1.851     509.668     275.408     384.739       1.397

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   397.70    -0.14   397.70     0.33     0.60   542.54
 MEAN    15.91     0.00    -0.02   397.70    -0.14   397.70     0.33     0.54
 HUB     13.07     0.00    -0.02   397.70    -0.14   397.70     0.33     0.49

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.91    47.36     8.55   587.54   709.60    10.06   595.58   522.35     0.06
 MEAN    52.08    44.80     7.28   510.35   647.12    10.06   595.58   522.35     0.06
 HUB     46.51    38.84     7.67   419.17   577.91    10.06   595.58   522.35     0.06

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   494.92   286.94   403.26  1207.34      0.41     2.05     1.78     7.43
 MEAN    15.50   498.13   283.26   409.76  1203.25      0.41     2.13     1.86     5.75
 HUB     12.59   529.76   327.23   416.62  1199.31      0.44     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    575.35   495.78   288.42     0.41  5150.13      0.92     0.91
 MEAN   497.02   462.17   213.77     0.38  4392.01      0.92     0.91     0.91     1.54
 HUB    403.77   423.60    76.55     0.35  4121.56      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     12.51     1.15    11.16   634.80     1.04   615.14   531.60     0.04
 MEAN    12.26     1.13    10.91   630.90     1.04   610.98   530.28     0.04
 HUB     12.17     1.12    10.66   629.51     1.03   606.97   529.81     0.05

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.43    35.57    31.50     4.07     0.93     0.44     1.40
 MEAN    34.66    27.55    23.50     4.05     0.93     0.42     1.64
 HUB     38.15    10.41     6.50     3.91     0.93     0.41     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   552.7074   288.4526   471.4664  1199.4896     0.4608    -0.1927     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   12.2861    10.6419   607.2162   530.5217     0.0448    31.4591    33.0000     1.5409
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   476.5431   108.8190   463.9523  1205.6879     0.3952     0.0812     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.2623    11.0262   613.5085   530.4596   410.5396     0.0369     0.3530

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   461.9581     0.0000   461.9581  1206.7365     0.3828     0.2771     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.0975   614.6093   530.4556     0.0000     0.0600     0.0374     0.1320

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8830    12.2617     1.1292   631.7364    23.4548   249.2300     1.9320

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 146121.672       0.441     529.831  597109.250   0.915383E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3099   Tt4 =   631.7364   T1  =   482.2738

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    930168.94   3372.7554    176.0119      2.3730      0.8684      5.6480      1.3099     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 69.9%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.986   EfDer =  0.999    SH =  0.901851E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     63.052    3644.566       5.167     482.274       1.000       1.000       0.980
  W Kg/sec =  28.660  Wdry =  63.047  WH2O = 0.006  lbm/sec   H2O =   0.039g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    172.962    3779.693       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 140751.047   49472.121       1.642     831.557     506.303     619.754       1.224

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   406.23    -0.14   406.23     0.39     0.73   680.44
 MEAN    17.06     0.00    -0.02   406.23    -0.14   406.23     0.39     0.64
 HUB     12.51     0.00    -0.02   406.23    -0.14   406.23     0.39     0.54

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.24    50.47     7.77   656.13   771.83     4.67   469.00   465.05     2.01
 MEAN    53.19    47.20     5.99   542.60   677.93     4.67   469.00   465.05     2.01
 HUB     44.42    38.62     5.80   397.88   568.72     4.67   469.00   465.05     2.01

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   641.98   370.83   524.04  1075.99      0.60     7.29     6.52    16.04
 MEAN    18.04   675.73   409.00   537.89  1070.49      0.63     7.43     6.80    12.53
 HUB     15.00   776.79   533.18   564.91  1060.89      0.73     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    656.13   596.67   285.30     0.55  7653.19      0.92     0.91
 MEAN   573.63   562.52   164.64     0.53  7379.06      0.92     0.91     0.91     1.34
 HUB    477.07   567.69    56.11     0.54  7999.41      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.70     1.30     5.28   521.42     1.08   488.28   486.88     1.00
 MEAN     6.64     1.28     5.09   520.02     1.08   483.30   486.25     1.18
 HUB      6.77     1.31     4.76   523.19     1.08   474.67   488.10     1.60

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.29    28.57    24.20     4.37     0.93     0.36     1.80
 MEAN    37.25    17.02    12.70     4.32     0.92     0.31     2.22
 HUB     43.34    -5.67    -9.30     3.63     0.92     0.17     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   713.8489   408.2022   585.6204  1067.4574     0.6687    -0.0723     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6859     4.9709   480.5669   487.0591     1.2974    34.8781    35.4000     0.5219

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   556.7946   136.2090   539.8772  1085.1255     0.5131     0.3211     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6589     5.5763   496.6151   486.7202   554.9116     0.0263     0.4305

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   552.4993     0.0000   552.4993  1085.5204     0.5090     0.3525     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5754   497.0011   486.6722     0.0000     0.0600     0.0382     0.3205
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8798     6.6392     1.2849   521.5433    39.2700   217.0716     1.6827

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 244209.359       0.567     870.151  672931.000   0.908733E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.978   EfDer =  1.000    SH =  0.912397E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     63.052    3644.566       6.639     521.543       1.000       1.000       0.980
 W Kg/sec =  28.660  Wdry =  63.046  WH2O = 0.006  lbm/sec   H2O =   0.045g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    139.988    3634.618       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 121811.773   49472.098       1.441     590.487     409.788     468.502       1.143

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   495.10    -0.17   495.10     0.45     0.75   651.79
 MEAN    18.08     0.00    -0.02   495.10    -0.17   495.10     0.45     0.70
 HUB     15.21     0.00    -0.02   495.10    -0.17   495.10     0.45     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.86     46.36     6.50   653.59   820.08     5.77   501.84   486.62     0.64
 MEAN    49.28     42.30     6.98   574.98   758.89     5.77   501.84   486.62     0.64
 HUB     44.35     37.84     6.51   483.75   692.32     5.77   501.84   486.62     0.64

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   576.46   300.87   491.71  1117.01      0.52     2.33     2.04     9.02
 MEAN    18.01   590.75   313.51   500.69  1112.88      0.53     2.40     2.13     7.35
 HUB     15.22   642.70   390.70   510.31  1109.02      0.58     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    649.45   602.74   348.59     0.54  6147.22      0.92     0.91
 MEAN   572.80   563.85   259.29     0.51  5649.41      0.92     0.91     0.91     1.46
 HUB    484.17   518.80    93.47     0.47  5950.17      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.06     1.21     6.74   552.98     1.06   526.26   501.13     0.31
 MEAN     7.94     1.20     6.57   550.43     1.06   522.38   500.05     0.34
 HUB      8.02     1.21     6.40   551.97     1.06   518.76   500.76     0.38

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.46    35.33    31.50     3.83     0.93     0.40     1.40
 MEAN    32.05    27.38    23.50     3.88     0.93     0.38     1.63
 HUB     37.44    10.38     6.50     3.88     0.93     0.39     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   656.3596   314.3913   576.1649  1107.2787     0.5928    -0.1744     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.9927     6.3196   517.1656   500.6682     0.3964    28.6196    30.6000     1.9804

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   544.0760   115.3480   531.7081  1118.8209     0.4863     0.1566     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.9725     6.7955   527.9997   500.5244   491.5697     0.0241     0.3060

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.8235   568.2507     0.0000   568.2507  1116.5052     0.5090     0.2145     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6785	525.8412	500.4972	0.0000	0.0600	0.0379	0.0751

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8804	7.9526	1.1978	551.7946	30.2517	245.5166	1.9032

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
188198.766	0.446	670.578	604312.625	0.913128E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 7.084 EfDer = 1.000 SH = 0.913128E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.052	3644.566	7.953	551.794	1.000	1.000	0.980

W Kg/sec = 28.660 Wdry = 63.046 WH2O = 0.006 lbm/sec H2O = 0.052g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
120.210	3533.583	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
105791.086	49472.098	1.550	545.479	351.909	424.468	1.206

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	465.46	-0.16	465.46	0.41	0.70	618.87
MEAN	17.74	0.00	-0.02	465.46	-0.16	465.46	0.41	0.65	
HUB	15.05	0.00	-0.02	465.46	-0.16	465.46	0.41	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.91	46.36	7.55	638.32	790.14	7.08	534.38	500.44	0.24
MEAN	50.48	43.40	7.08	564.17	731.52	7.08	534.38	500.44	0.24
HUB	45.81	38.84	6.97	478.66	667.78	7.08	534.38	500.44	0.24

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	553.70	298.73	466.19	1149.53	0.48	2.26	1.98	8.75
MEAN	17.51	566.38	310.64	473.59	1145.82	0.49	2.34	2.07	6.78
HUB	14.85	615.38	383.14	481.55	1142.32	0.54	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	630.05	571.93	331.32	0.50	5921.15	0.92	0.91		
MEAN	556.79	533.74	246.15	0.47	5441.06	0.92	0.91	0.91	1.49
HUB	472.30	489.74	89.16	0.43	5692.06	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.50	1.19	8.12	582.06	1.05	557.43	512.86	0.13
MEAN	9.36	1.18	7.94	579.61	1.05	553.83	511.91	0.15
HUB	9.43	1.19	7.76	580.89	1.05	550.46	512.44	0.16

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.65	35.40	31.50	3.90	0.93	0.41	1.40
MEAN	33.26	27.46	23.50	3.96	0.93	0.40	1.62
HUB	38.51	10.49	6.50	3.99	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	624.6964	312.6773	540.8129	1141.2816	0.5474	-0.1610	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4164	7.7004	549.4992	512.3962	0.1629	30.0349	31.5000	1.4651

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	522.0183	113.8748	509.4464	1151.0674	0.4535	0.1585	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.3987	8.1766	558.9594	512.3059	451.3937	0.0219	0.3277

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	532.4721	0.0000	532.4721	1150.1263	0.4630	0.2386	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1098	558.0767	512.2610	0.0000	0.0600	0.0373	0.1137

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8820	9.3757	1.1789	580.8552	29.0611	235.7274	1.8273

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
180863.656	0.456	644.442	579871.750	0.913763E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 7.321 EfDer = 0.999 SH = 0.913763E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.052	3644.566	9.376	580.855	1.000	1.000	0.980

W Kg/sec = 28.660 Wdry = 63.046 WH2O = 0.006 lbm/sec H2O = 0.060g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
104.614	3444.055	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
93107.930	49472.098	1.676	513.330	306.271	395.845	1.292

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	435.31	-0.15	435.31	0.38	0.65	578.84
MEAN	16.97	0.00	-0.02	435.31	-0.15	435.31	0.38	0.60	
HUB	14.32	0.00	-0.02	435.31	-0.15	435.31	0.38	0.54	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.61	46.36	8.25	612.56	751.61	8.51	565.63	512.23	0.11
MEAN	51.12	43.80	7.32	539.75	693.53	8.51	565.63	512.23	0.11
HUB	46.30	37.84	8.46	455.45	630.13	8.51	565.63	512.23	0.11

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	524.85	288.92	438.18	1179.14	0.45	2.16	1.89	8.34
MEAN	16.57	534.25	296.07	444.71	1175.52	0.45	2.24	1.97	6.35
HUB	13.89	576.71	358.54	451.71	1172.07	0.49	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	600.48	537.65	311.56	0.46	5457.61	0.92	0.91		
MEAN	527.13	501.15	231.06	0.43	4909.62	0.92	0.91	0.91	1.51
HUB	441.77	459.31	83.22	0.39	4982.34	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.96	1.17	9.58	608.74	1.05	586.61	522.68	0.07
MEAN	10.79	1.15	9.38	605.94	1.04	583.01	521.68	0.07
HUB	10.81	1.15	9.18	606.31	1.04	579.60	521.82	0.08

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.40	35.41	31.50	3.91	0.93	0.42	1.40
MEAN	33.65	27.46	23.50	3.96	0.93	0.41	1.62
HUB	38.44	10.44	6.50	3.94	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	574.9388	297.7378	491.8403	1172.8788	0.4902	-0.1129	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.8379	9.2151	580.4518	522.0426	0.0783	31.1888	32.4000	1.2112

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	486.9586	109.2106	474.5543	1180.4318	0.4125	0.1775	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.8239	9.6421	587.9552	521.9874	432.2457	0.0195	0.3467

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	482.9695	0.0000	482.9695	1180.7137	0.4090	0.2603	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.6375	588.2683	521.9338	0.0000	0.0600	0.0371	0.1743

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8821	10.7980	1.1517	606.9988	26.1444	239.3172	1.8552

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
162788.813	0.451	580.039	575404.375	0.914949E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.480 EfDer = 0.999 SH = 0.914994E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.052	3644.566	10.798	606.999	1.000	1.000	0.980

W Kg/sec = 28.660 Wdry = 63.046 WH2O = 0.006 lbm/sec H2O = 0.067g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
92.856	3369.070	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
83149.617	49472.098	1.875	509.668	271.867	384.739	1.415

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	391.55	-0.13	391.55	0.33	0.59	538.60
MEAN	15.91	0.00	-0.02	391.55	-0.13	391.55	0.33	0.54	
HUB	13.07	0.00	-0.02	391.55	-0.13	391.55	0.33	0.48	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	56.11	47.36	8.75	582.66	702.11	10.02	594.69	521.91	0.06
MEAN	52.28	44.80	7.48	506.11	639.99	10.02	594.69	521.91	0.06
HUB	46.72	38.84	7.88	415.69	571.16	10.02	594.69	521.91	0.06

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	489.86	286.46	397.37	1206.22	0.41	2.05	1.78	7.43
MEAN	15.50	492.66	282.37	403.72	1202.17	0.41	2.13	1.86	5.75
HUB	12.59	523.58	325.10	410.42	1198.25	0.44	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	570.58	488.50	284.12	0.40	5141.50	0.92	0.91		
MEAN	492.90	455.31	210.53	0.38	4378.16	0.92	0.91	0.91	1.55
HUB	400.42	417.27	75.32	0.35	4094.80	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	12.43	1.15	11.11	633.26	1.04	613.99	531.11	0.04
MEAN	12.18	1.13	10.86	629.36	1.04	609.87	529.78	0.04
HUB	12.08	1.12	10.62	627.91	1.03	605.90	529.29	0.05

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	35.79	35.56	31.50	4.06	0.93	0.45	1.40
MEAN	34.97	27.54	23.50	4.04	0.93	0.42	1.64
HUB	38.38	10.40	6.50	3.90	0.93	0.41	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	546.0810	287.5448	464.2439	1198.5284	0.4556	-0.1907	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
12.2029	10.6032	606.2384	530.0228	0.0457	31.7734	33.0000	1.2266

```
    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   469.2271   107.1484   456.8296  1204.7028     0.3895     0.0893     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    12.1808    10.9861   612.5018   529.9637   410.5396     0.0362     0.3573

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   454.9614     0.0000   454.9614  1205.7126     0.3773     0.2819     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500    11.0541   613.5621   529.9587     0.0000     0.0600     0.0371     0.1391

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8834    12.1796     1.1279   630.1747    23.1767   247.4486     1.9182

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 144386.109       0.444     514.467  586740.375   0.916205E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3067   Tt4 =   630.1747   T1  =   482.2737

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    920446.69   3279.6777    172.9624      2.3571      0.8699      5.9857      1.3067     37.3740
```

Appendix I: NPSS cycle analysis for the altitude cruise conditions at 39000 feet

5μm, ISA +18R

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**********************************************************************************************************************************
Date:05/10/13    Time:11:00:06    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 26/ 54/ 2/23    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 444.75    Stator 1 exit: 463.49    Stator 2 inlet: 485.28    Stator 2 exit: 492.72
            Stator 3 inlet: 521.55    Stator 3 exit: 529.73    Stator 4 inlet: 556.62    Stator 4 exit: 564.45
            Stator 5 inlet: 585.25    Stator 5 exit: 592.90            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.21
Fan Bypass Relative Humidity       0.15
LPC Inlet Relative Humidity        2.28
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.01
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          772.64    Fan/LPC Inlet Flow Velocity        483.11
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.66
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   438.28
Additional Water at LPC Exit   0.0029812
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	396.12	6805.8	0.5961	4057.03	5.3007	772.64	32.312	1.705	100.000	2814.3	2641.6	1836.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	396.12	4.267	457.74	-20.96	0.0000	1281.69	2.854	407.97	3910.0	0.7800	1.40084	0.0000295	396.11	0.012	0.0000
FS1	Inlet.Fl_O	396.12	4.267	457.74	-20.96	0.0000	1281.69	3.152	419.74	4168.2	0.6720	1.40084	0.0000295	396.11	0.012	0.0000
FS12	Splitter.Fl_02	333.25	4.265	457.74	-20.96	0.0000	1078.81	3.174	420.64	3531.8	0.6633	1.40084	0.0000295	333.24	0.010	0.0000
FS2	Splitter.Fl_01	62.87	4.265	457.74	-20.96	0.0000	203.52	3.664	438.28	830.5	0.4706	1.40084	0.0000295	62.87	0.002	0.0000
FS14	Fan.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	6.024	512.21	2606.7	0.5226	1.39992	0.0000295	333.24	0.010	0.0000
FS23	LPC.Fl_O	62.87	10.583	621.71	18.40	0.0000	95.58	9.281	598.87	412.6	0.4374	1.39828	0.0000295	62.87	0.002	0.0000
FS24	VaporIN.Fl_O	63.06	10.583	625.30	2.18	0.0000	96.14	9.260	601.96	412.6	0.4413	1.39776	0.0030106	62.87	0.189	0.0030
FS25	Bleed2.Fl_O	63.06	10.583	625.30	2.18	0.0000	96.14	9.260	601.96	412.6	0.4413	1.39776	0.0030106	62.87	0.189	0.0030
FS3	HPC.Fl_O	60.00	137.870	1377.26	190.17	0.0000	10.42	124.294	1340.14	49.7	0.3933	1.35677	0.0030106	59.82	0.180	0.0030
FS36	Bleed3.Fl_O	46.50	137.870	1377.26	190.17	0.0000	8.08	129.984	1356.06	49.3	0.2957	1.35677	0.0030106	46.36	0.140	0.0030
FS4	Burner.Fl_O	47.62	134.694	2814.25	160.34	0.0243	12.10	127.230	2778.51	74.6	0.3007	1.28425	0.0030106	46.36	0.140	0.0321
FS45	HPT.Fl_O	63.45	31.488	1845.31	-17.97	0.0181	55.85	28.359	1798.88	265.4	0.4006	1.32062	0.0030106	62.13	0.187	0.0249
FS49	LPT.Fl_O	64.18	7.245	1322.51	-157.86	0.0179	207.90	6.249	1272.87	860.2	0.4723	1.34775	0.0030106	62.87	0.189	0.0246
FS5	TEGV.Fl_O	64.18	7.245	1322.57	-157.86	0.0179	207.91	6.249	1272.93	860.2	0.4723	1.34775	0.0030106	62.87	0.189	0.0246
FS8	Core_Nozz.Fl_O	64.18	7.245	1322.70	-157.86	0.0179	207.92	3.875	1123.01	613.4	1.0000	1.34774	0.0030106	62.87	0.189	0.0246
FS17	FanDuctLkg.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	6.024	512.21	2606.7	0.5226	1.39992	0.0000295	333.24	0.010	0.0000
FS171	Bleed15.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	5.854	508.03	2481.9	0.5625	1.39992	0.0000295	333.24	0.010	0.0000
FS172	FanDuct.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	5.854	508.03	2481.9	0.5625	1.39992	0.0000295	333.24	0.010	0.0000
FS173	Byp_Nozz.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	3.833	450.06	2006.9	1.0000	1.39992	0.0000295	333.24	0.010	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1078.81	1.702	0.9114	4139.469	1.1801	0.9178	-9322.3	36.69	23.09
LPC	203.52	2.482	0.8276	4139.469	1.3582	0.8480	-3501.0	2.97	2.24
HPC	96.14	13.027	0.8586	10339.379	2.2026	0.8979	-16365.1	26.38	25.58
HPT	12.10	4.278	0.9118	213.999	1.3463	0.8912	16364.9		
LPT	55.85	4.346	0.9155	90.526	1.3918	0.8989	12823.3		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1253.47	1.686	0.9132	4100.000	0.0639	0.8607	1.0235	0.9980	0.9905
LPC	166.84	2.748	0.8341	1.093	0.0000	1.2198	0.8477	0.9922	0.0003
HPC	87.44	12.460	0.8675	10063.738	13.4623	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.187	0.9118	1.286	4.1868	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.517	0.9223	1.018	3.5170	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3910.00	9512.5

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4723	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.3007	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11352.5	7571.0	16364.9
LP_Shaft	3888.7	17319.1	12823.3

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.3205	1009.15	96.17	31.488
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.7378	1009.15	96.17	7.245
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	971.41	86.77	38.586
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1202.68	145.05	89.501
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	971.41	86.77	38.586
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1377.26	190.17	137.870
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	971.41	86.77	38.586

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	625.30	2.18	10.583
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	7.1997	1377.26	190.17	134.694
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	6.2999	1377.26	190.17	75.660
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1377.26	190.17	137.870
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1377.26	190.17	137.870
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1377.26	190.17	137.870
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2814.25	0.9995	0.0230	1.12695	0.02431

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.538	0.9809	1.0000	0.9800	613.40	1.000	1588.3	3794.4
Byp_Nozz	2.543	0.9810	1.0000	0.9800	2006.86	1.000	1019.5	12523.9

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**********************************************************************************************************************************
Date:05/10/13    Time:11:00:41    Model:                                  Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    84
Temperature Stator 1 inlet: 450.83    Stator 1 exit: 468.07    Stator 2 inlet: 488.64    Stator 2 exit: 496.76
            Stator 3 inlet: 522.20    Stator 3 exit: 530.54    Stator 4 inlet: 554.47    Stator 4 exit: 562.16
            Stator 5 inlet: 581.05    Stator 5 exit: 588.40             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.13
Fan Bypass Relative Humidity       0.18
LPC Inlet Relative Humidity        1.99
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.01
Drop Diameter                  0.0000050    Inlet Length                         40.00
Ambient Flow Velocity             772.64    Fan/LPC Inlet Flow Velocity         443.02
Ambient Static Pressure             2.85    Fan/LPC Inlet Static Pressure         3.76
Ambient Static Temperature        407.97    Fan/LPC Inlet Static Temperature    441.38
Additional Water at LPC Exit     0.0032403
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	378.64	5820.2	0.5893	3429.77	5.4535	772.64	29.224	1.498	84.000	2651.2	2490.8	1726.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	378.64	4.267	457.74	-20.96	0.0000	1225.14	2.854	407.97	3737.5	0.7800	1.40084	0.0000295	378.63	0.011	0.0000
FS1	Inlet.Fl_O	378.64	4.267	457.74	-20.96	0.0000	1225.14	3.297	425.18	4168.2	0.6181	1.40084	0.0000295	378.63	0.011	0.0000
FS12	Splitter.Fl_02	319.97	4.265	457.74	-20.96	0.0000	1035.82	3.302	425.40	3531.8	0.6157	1.40084	0.0000295	319.96	0.009	0.0000
FS2	Splitter.Fl_01	58.67	4.265	457.74	-20.96	0.0000	189.94	3.755	441.38	830.5	0.4300	1.40084	0.0000295	58.67	0.002	0.0000
FS14	Fan.Fl_O	319.97	6.916	532.19	-3.11	0.0000	688.70	5.741	504.60	2606.7	0.5226	1.40004	0.0000295	319.96	0.009	0.0000
FS23	LPC.Fl_O	58.67	10.432	613.70	16.48	0.0000	89.91	9.319	594.27	412.6	0.4050	1.39848	0.0000295	58.67	0.002	0.0000
FS24	VaporIN.Fl_O	58.86	10.432	617.64	-1.15	0.0000	90.49	9.299	597.75	412.6	0.4088	1.39792	0.0032697	58.67	0.192	0.0033
FS25	Bleed2.Fl_O	58.86	10.432	617.64	-1.15	0.0000	90.49	9.299	597.75	412.6	0.4088	1.39792	0.0032697	58.67	0.192	0.0033
FS3	HPC.Fl_O	56.01	124.692	1326.74	175.57	0.0000	10.56	112.046	1289.65	49.7	0.3991	1.35972	0.0032697	55.82	0.183	0.0033
FS36	Bleed3.Fl_O	43.41	124.692	1326.74	175.57	0.0000	8.18	117.358	1305.60	49.3	0.2997	1.35972	0.0032697	43.26	0.141	0.0033
FS4	Burner.Fl_O	44.36	121.820	2651.21	148.93	0.0220	12.10	115.055	2617.01	74.6	0.2999	1.29033	0.0032697	43.26	0.141	0.0297
FS45	HPT.Fl_O	59.13	28.385	1734.99	-19.33	0.0164	55.99	25.546	1690.44	265.4	0.4009	1.32659	0.0032697	57.98	0.190	0.0231
FS49	LPT.Fl_O	59.81	6.525	1239.14	-150.29	0.0162	208.21	5.626	1191.87	860.2	0.4721	1.35402	0.0032697	58.67	0.192	0.0229
FS5	TEGV.Fl_O	59.81	6.525	1239.20	-150.29	0.0162	208.22	5.626	1191.93	860.2	0.4721	1.35402	0.0032697	58.67	0.192	0.0229
FS8	Core_Nozz.Fl_O	59.81	6.525	1239.33	-150.29	0.0162	208.23	3.483	1049.52	613.4	1.0000	1.35401	0.0032697	58.67	0.192	0.0229
FS17	FanDuctLkg.Fl_O	319.97	6.916	532.19	-3.11	0.0000	688.70	5.741	504.60	2606.7	0.5226	1.40004	0.0000295	319.96	0.009	0.0000
FS171	Bleed15.Fl_O	319.97	6.916	532.19	-3.11	0.0000	688.70	5.579	500.49	2481.9	0.5625	1.40004	0.0000295	319.96	0.009	0.0000
FS172	FanDuct.Fl_O	319.97	6.916	532.19	-3.11	0.0000	688.70	5.579	500.49	2481.9	0.5625	1.40004	0.0000295	319.96	0.009	0.0000
FS173	Byp_Nozz.Fl_O	319.97	6.916	532.19	-3.11	0.0000	688.70	3.652	443.37	2006.9	1.0000	1.40004	0.0000295	319.96	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1035.82	1.622	0.9117	3971.018	1.1626	0.9175	-8080.2	52.83	26.41
LPC	189.94	2.446	0.8546	3971.018	1.3407	0.8716	-3107.3	2.94	2.13
HPC	90.49	11.953	0.8609	10162.222	2.1481	0.8986	-14361.1	30.35	29.29
HPT	12.10	4.292	0.9099	215.372	1.3525	0.8903	14361.2		
LPT	55.99	4.350	0.9132	89.561	1.3971	0.8963	11187.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1203.52	1.607	0.9136	3933.155	0.0612	0.8607	1.0235	0.9980	0.9905
LPC	151.42	2.562	0.8233	1.049	0.0000	1.2544	0.9255	1.0380	0.0003
HPC	82.30	11.437	0.8698	9891.304	13.1020	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.200	0.9098	1.294	4.2005	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.520	0.9200	1.007	3.5195	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3737.52	9092.9

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4721	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4535	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11089.5	6801.6	14361.2
LP_Shaft	3730.5	15750.6	11187.4

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.1661	979.04	87.21	28.385
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.6887	979.04	87.21	6.525
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	943.45	78.37	35.569
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1161.72	133.16	81.273
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	943.45	78.37	35.569
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1326.74	175.57	124.692
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	943.45	78.37	35.569

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	617.64	-1.15	10.432
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	6.7209	1326.74	175.57	121.820
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	5.8809	1326.74	175.57	68.375
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1326.74	175.57	124.692
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1326.74	175.57	124.692
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1326.74	175.57	124.692
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	532.19	-3.11	6.916
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	532.19	-3.11	6.916
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	532.19	-3.11	6.916
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	532.19	-3.11	6.916

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2651.19	0.9995	0.0230	0.95271	0.02202

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.286	0.9816	1.0000	0.9800	613.40	1.000	1538.9	3247.1
Byp_Nozz	2.423	0.9814	1.0000	0.9800	2006.86	1.000	1011.9	11666.0

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Date:05/10/13 Time:11:01:31 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 19/ 47/ 2/16 Run by: Philip C Jorgenson PC: 79
Temperature Stator 1 inlet: 452.44 Stator 1 exit: 469.27 Stator 2 inlet: 489.52 Stator 2 exit: 497.76
Stator 3 inlet: 522.38 Stator 3 exit: 530.72 Stator 4 inlet: 553.90 Stator 4 exit: 561.54
Stator 5 inlet: 579.94 Stator 5 exit: 587.21 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.89		
Fan Bypass Relative Humidity	0.20		
LPC Inlet Relative Humidity	1.91		
LPC Exit Relative Humidity	0.02		
HPC Relative Humidity	0.01		
Drop Diameter	0.0000050	Inlet Length	40.00
Ambient Flow Velocity	772.64	Fan/LPC Inlet Flow Velocity	430.69
Ambient Static Pressure	2.85	Fan/LPC Inlet Static Pressure	3.78
Ambient Static Temperature	407.97	Fan/LPC Inlet Static Temperature	442.28
Additional Water at LPC Exit	0.0033318		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	373.35	5530.6	0.5885	3254.66	5.5124	772.64	28.295	1.439	79.800	2605.0	2448.0	1696.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	373.35	4.267	457.74	-20.96	0.0000	1208.02	2.854	407.97	3685.3	0.7800	1.40084	0.0000295	373.34	0.011	0.0000
FS1	Inlet.Fl_O	373.35	4.267	457.74	-20.96	0.0000	1208.02	3.336	426.61	4168.2	0.6033	1.40084	0.0000295	373.34	0.011	0.0000
FS12	Splitter.Fl_02	316.02	4.265	457.74	-20.96	0.0000	1023.04	3.336	426.66	3531.8	0.6028	1.40084	0.0000295	316.01	0.009	0.0000
FS2	Splitter.Fl_01	57.33	4.265	457.74	-20.96	0.0000	185.59	3.782	442.28	830.5	0.4176	1.40084	0.0000295	57.33	0.002	0.0000
FS14	Fan.Fl_O	316.02	6.815	529.79	-3.68	0.0000	688.70	5.657	502.33	2606.7	0.5226	1.40007	0.0000295	316.01	0.009	0.0000
FS23	LPC.Fl_O	57.33	10.371	611.54	15.96	0.0000	88.21	9.311	593.03	412.6	0.3956	1.39853	0.0000295	57.33	0.002	0.0000
FS24	VaporIN.Fl_O	57.52	10.371	615.61	-2.17	0.0000	88.80	9.292	596.65	412.6	0.3994	1.39796	0.0033613	57.33	0.193	0.0034
FS25	Bleed2.Fl_O	57.52	10.371	615.61	-2.17	0.0000	88.80	9.292	596.65	412.6	0.3994	1.39796	0.0033613	57.33	0.193	0.0034
FS3	HPC.Fl_O	54.73	120.730	1312.35	171.33	0.0000	10.60	108.380	1275.28	49.7	0.4008	1.36058	0.0033613	54.55	0.183	0.0034
FS36	Bleed3.Fl_O	42.42	120.730	1312.35	171.33	0.0000	8.21	113.572	1291.25	49.3	0.3008	1.36058	0.0033613	42.27	0.142	0.0034
FS4	Burner.Fl_O	43.32	117.950	2604.98	145.56	0.0214	12.10	111.399	2571.22	74.6	0.2996	1.29207	0.0033613	42.27	0.142	0.0290
FS45	HPT.Fl_O	57.75	27.458	1704.05	-19.80	0.0160	56.02	24.708	1660.07	265.4	0.4009	1.32834	0.0033613	56.66	0.190	0.0226
FS49	LPT.Fl_O	58.42	6.311	1215.93	-148.25	0.0158	208.29	5.441	1169.35	860.2	0.4720	1.35578	0.0033613	57.33	0.193	0.0224
FS5	TEGV.Fl_O	58.42	6.311	1215.99	-148.25	0.0158	208.30	5.441	1169.41	860.2	0.4720	1.35577	0.0033613	57.33	0.193	0.0224
FS8	Core_Nozz.Fl_O	58.42	6.311	1216.12	-148.25	0.0158	208.31	3.367	1029.14	613.4	1.0000	1.35576	0.0033613	57.33	0.193	0.0224
FS17	FanDuctLkg.Fl_O	316.02	6.815	529.79	-3.68	0.0000	688.70	5.657	502.33	2606.7	0.5226	1.40007	0.0000295	316.01	0.009	0.0000
FS171	Bleed15.Fl_O	316.02	6.815	529.79	-3.68	0.0000	688.70	5.498	498.23	2481.9	0.5625	1.40007	0.0000295	316.01	0.009	0.0000
FS172	FanDuct.Fl_O	316.02	6.815	529.79	-3.68	0.0000	688.70	5.498	498.23	2481.9	0.5625	1.40007	0.0000295	316.01	0.009	0.0000
FS173	Byp_Nozz.Fl_O	316.02	6.815	529.79	-3.68	0.0000	688.70	3.599	441.37	2006.9	1.0000	1.40007	0.0000295	316.01	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1023.04	1.598	0.9114	3923.364	1.1574	0.9171	-7723.8	56.99	27.45
LPC	185.59	2.432	0.8601	3923.364	1.3360	0.8764	-2994.1	3.32	2.60
HPC	88.80	11.642	0.8614	10115.453	2.1318	0.8987	-13777.4	31.59	30.43
HPT	12.10	4.296	0.9090	215.918	1.3541	0.8897	13777.4		
LPT	56.02	4.351	0.9125	89.286	1.3985	0.8954	10717.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1188.67	1.584	0.9133	3885.955	0.0604	0.8607	1.0235	0.9980	0.9905
LPC	148.34	2.513	0.8224	1.036	0.0000	1.2511	0.9460	1.0459	0.0003
HPC	80.76	11.140	0.8703	9845.782	12.9962	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.204	0.9090	1.298	4.2043	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.520	0.9192	1.004	3.5201	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3685.27	8965.7
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5625	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5124	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11020.3	6566.1	13777.4
LP_Shaft	3685.7	15272.9	10717.9

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.1167	970.55	84.58	27.458
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.6730	970.55	84.58	6.311
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	935.58	75.91	34.650
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1150.11	129.69	78.793
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	935.58	75.91	34.650
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1312.35	171.33	120.730
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	935.58	75.91	34.650

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	615.61	-2.17	10.371
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	6.5676	1312.35	171.33	117.950
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	5.7468	1312.35	171.33	66.189
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1312.35	171.33	120.730
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1312.35	171.33	120.730
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1312.35	171.33	120.730
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	529.79	-3.68	6.815
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	529.79	-3.68	6.815
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	529.79	-3.68	6.815
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	529.79	-3.68	6.815

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2604.96	0.9995	0.0230	0.90407	0.02139

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.211	0.9816	1.0000	0.9800	613.40	1.000	1524.8	3083.8
Byp_Nozz	2.388	0.9815	1.0000	0.9800	2006.86	1.000	1009.6	11412.6

****

Date:05/10/13 Time:11:02:07 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 20/ 34/ 1/18 Run by: Philip C Jorgenson PC: 76
Temperature Stator 1 inlet: 453.52 Stator 1 exit: 470.08 Stator 2 inlet: 490.14 Stator 2 exit: 498.45
Stator 3 inlet: 522.55 Stator 3 exit: 530.89 Stator 4 inlet: 553.58 Stator 4 exit: 561.19
Stator 5 inlet: 579.25 Stator 5 exit: 586.48 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.73		
Fan Bypass Relative Humidity	0.21		
LPC Inlet Relative Humidity	1.86		
LPC Exit Relative Humidity	0.02		
HPC Relative Humidity	0.01		
Drop Diameter	0.0000050	Inlet Length	40.00
Ambient Flow Velocity	772.64	Fan/LPC Inlet Flow Velocity	421.98
Ambient Static Pressure	2.85	Fan/LPC Inlet Static Pressure	3.80
Ambient Static Temperature	407.97	Fan/LPC Inlet Static Temperature	442.90
Additional Water at LPC Exit	0.0034016		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	369.47	5325.2	0.5888	3135.61	5.5548	772.64	27.645	1.398	76.800	2573.5	2418.9	1675.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	369.47	4.267	457.74	-20.96	0.0000	1195.45	2.854	407.97	3646.9	0.7800	1.40084	0.0000295	369.45	0.011	0.0000
FS1	Inlet.Fl_O	369.47	4.267	457.74	-20.96	0.0000	1195.45	3.363	427.60	4168.2	0.5929	1.40084	0.0000295	369.45	0.011	0.0000
FS12	Splitter.Fl_02	313.10	4.265	457.74	-20.96	0.0000	1013.58	3.360	427.54	3531.8	0.5935	1.40084	0.0000295	313.09	0.009	0.0000
FS2	Splitter.Fl_01	56.37	4.265	457.74	-20.96	0.0000	182.47	3.801	442.90	830.5	0.4089	1.40084	0.0000295	56.36	0.002	0.0000
FS14	Fan.Fl_O	313.10	6.742	528.16	-4.07	0.0000	688.70	5.596	500.78	2606.7	0.5226	1.40010	0.0000295	313.09	0.009	0.0000
FS23	LPC.Fl_O	56.37	10.328	610.15	15.62	0.0000	86.99	9.305	592.29	412.6	0.3889	1.39857	0.0000295	56.36	0.002	0.0000
FS24	VaporIN.Fl_O	56.56	10.328	614.31	-2.88	0.0000	87.58	9.287	596.01	412.6	0.3927	1.39798	0.0034311	56.36	0.193	0.0034
FS25	Bleed2.Fl_O	56.56	10.328	614.31	-2.88	0.0000	87.58	9.287	596.01	412.6	0.3927	1.39798	0.0034311	56.36	0.193	0.0034
FS3	HPC.Fl_O	53.81	117.957	1302.62	168.42	0.0000	10.63	105.818	1265.54	49.7	0.4020	1.36116	0.0034311	53.63	0.184	0.0034
FS36	Bleed3.Fl_O	41.71	117.957	1302.62	168.42	0.0000	8.23	110.924	1281.52	49.3	0.3017	1.36116	0.0034311	41.56	0.143	0.0034
FS4	Burner.Fl_O	42.58	115.240	2573.46	143.23	0.0210	12.09	108.838	2540.01	74.6	0.2994	1.29327	0.0034311	41.56	0.143	0.0286
FS45	HPT.Fl_O	56.77	26.812	1683.06	-20.14	0.0156	56.05	24.124	1639.45	265.4	0.4009	1.32954	0.0034311	55.70	0.191	0.0223
FS49	LPT.Fl_O	57.43	6.162	1200.21	-146.90	0.0155	208.35	5.312	1154.09	860.2	0.4719	1.35697	0.0034311	56.36	0.193	0.0221
FS5	TEGV.Fl_O	57.43	6.162	1200.27	-146.90	0.0155	208.36	5.312	1154.15	860.2	0.4719	1.35697	0.0034311	56.36	0.193	0.0221
FS8	Core_Nozz.Fl_O	57.43	6.162	1200.40	-146.90	0.0155	208.37	3.287	1015.35	613.4	1.0000	1.35696	0.0034311	56.36	0.193	0.0221
FS17	FanDuctLkg.Fl_O	313.10	6.742	528.16	-4.07	0.0000	688.70	5.596	500.78	2606.7	0.5226	1.40010	0.0000295	313.09	0.009	0.0000
FS171	Bleed15.Fl_O	313.10	6.742	528.16	-4.07	0.0000	688.70	5.438	496.69	2481.9	0.5625	1.40010	0.0000295	313.09	0.009	0.0000
FS172	FanDuct.Fl_O	313.10	6.742	528.16	-4.07	0.0000	688.70	5.438	496.69	2481.9	0.5625	1.40010	0.0000295	313.09	0.009	0.0000
FS173	Byp_Nozz.Fl_O	313.10	6.742	528.16	-4.07	0.0000	688.70	3.560	440.00	2006.9	1.0000	1.40010	0.0000295	313.09	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1013.58	1.581	0.9096	3891.073	1.1538	0.9153	-7478.6	59.09	28.22
LPC	182.47	2.422	0.8634	3891.073	1.3330	0.8792	-2917.1	3.59	2.85
HPC	87.58	11.421	0.8614	10082.571	2.1204	0.8985	-13375.1	32.47	31.24
HPT	12.09	4.298	0.9085	216.303	1.3552	0.8892	13375.1		
LPT	56.05	4.351	0.9119	89.101	1.3995	0.8948	10395.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1177.68	1.568	0.9115	3853.972	0.0598	0.8607	1.0235	0.9980	0.9905
LPC	146.25	2.480	0.8217	1.028	0.0000	1.2477	0.9605	1.0507	0.0003
HPC	79.66	10.930	0.8703	9813.777	12.9219	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.207	0.9085	1.300	4.2067	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.521	0.9187	1.002	3.5206	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3646.93	8872.5

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4719	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5548	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10972.9	6401.9	13375.1
LP_Shaft	3655.4	14936.8	10395.7

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.0813	964.85	82.77	26.812
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6617	964.85	82.77	6.162
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	930.30	74.21	34.006
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1142.26	127.31	77.058
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	930.30	74.21	34.006
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1302.62	168.42	117.957
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	930.30	74.21	34.006

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	614.31	-2.88	10.328
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.4577	1302.62	168.42	115.240
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.6506	1302.62	168.42	64.659
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1302.62	168.42	117.957
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1302.62	168.42	117.957
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1302.62	168.42	117.957
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	528.16	-4.07	6.742
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	528.16	-4.07	6.742
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	528.16	-4.07	6.742
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	528.16	-4.07	6.742

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2573.44	0.9995	0.0230	0.87100	0.02096

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.159	0.9815	1.0000	0.9800	613.40	1.000	1515.2	2969.8
Byp_Nozz	2.362	0.9815	1.0000	0.9800	2006.86	1.000	1008.1	11227.9

5µm, ISA +36R

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**********************************************************************************************************************************
Date:05/10/13    Time:11:38:06    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 24/ 38/ 1/22    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 465.07    Stator 1 exit: 484.73    Stator 2 inlet: 507.72    Stator 2 exit: 515.80
            Stator 3 inlet: 545.76    Stator 3 exit: 554.54    Stator 4 inlet: 582.42    Stator 4 exit: 590.81
            Stator 5 inlet: 612.50    Stator 5 exit: 620.61            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.44
Fan Bypass Relative Humidity       0.19
LPC Inlet Relative Humidity        2.49
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.01
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        491.33
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.67
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   457.80
Additional Water at LPC Exit   0.0055918
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	387.42	6824.0	0.6109	4168.86	5.3204	789.49	32.228	1.708	100.000	2921.7	2743.6	1914.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	387.42	4.267	477.92	-16.44	0.0000	1280.92	2.854	425.97	3907.8	0.7800	1.40068	0.0000851	387.39	0.033	0.0001
FS1	Inlet.Fl_O	387.42	4.267	477.92	-16.44	0.0000	1280.92	3.154	438.33	4168.2	0.6713	1.40068	0.0000851	387.39	0.033	0.0001
FS12	Splitter.Fl_02	326.13	4.265	477.92	-16.44	0.0000	1078.79	3.174	439.19	3531.8	0.6634	1.40068	0.0000851	326.10	0.028	0.0001
FS2	Splitter.Fl_01	61.30	4.265	477.92	-16.44	0.0000	202.77	3.669	457.80	830.5	0.4683	1.40068	0.0000851	61.29	0.005	0.0001
FS14	Fan.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	6.025	534.77	2606.7	0.5227	1.39952	0.0000851	326.10	0.028	0.0001
FS23	LPC.Fl_O	61.30	10.700	650.42	25.00	0.0000	94.28	9.425	627.35	412.6	0.4299	1.39749	0.0000851	61.29	0.005	0.0001
FS24	VaporIN.Fl_O	61.64	10.700	656.78	-5.40	0.0000	95.27	9.388	632.82	412.6	0.4368	1.39650	0.0056769	61.29	0.348	0.0056
FS25	Bleed2.Fl_O	61.64	10.700	656.78	-5.40	0.0000	95.27	9.388	632.82	412.6	0.4368	1.39650	0.0056769	61.29	0.348	0.0056
FS3	HPC.Fl_O	58.65	137.506	1434.67	190.50	0.0000	10.43	123.924	1396.17	49.7	0.3944	1.35306	0.0056769	58.32	0.331	0.0056
FS36	Bleed3.Fl_O	45.45	137.506	1434.67	190.50	0.0000	8.08	129.620	1412.70	49.3	0.2965	1.35306	0.0056769	45.20	0.257	0.0056
FS4	Burner.Fl_O	46.61	134.340	2921.68	159.09	0.0256	12.10	126.902	2884.92	74.6	0.3014	1.27995	0.0056769	45.20	0.257	0.0361
FS45	HPT.Fl_O	62.08	31.473	1923.93	-26.47	0.0191	55.83	28.343	1875.95	265.4	0.4014	1.31633	0.0056769	60.58	0.344	0.0285
FS49	LPT.Fl_O	62.80	7.264	1383.50	-172.77	0.0189	207.51	6.268	1332.19	860.2	0.4726	1.34312	0.0056769	61.29	0.348	0.0283
FS5	TEGV.Fl_O	62.80	7.264	1383.57	-172.77	0.0189	207.51	6.268	1332.26	860.2	0.4726	1.34312	0.0056769	61.29	0.348	0.0283
FS8	Core_Nozz.Fl_O	62.80	7.264	1383.69	-172.77	0.0189	207.52	3.890	1177.08	613.4	1.0000	1.34311	0.0056769	61.29	0.348	0.0283
FS17	FanDuctLkg.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	6.025	534.77	2606.7	0.5227	1.39952	0.0000851	326.10	0.028	0.0001
FS171	Bleed15.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	5.854	530.41	2481.9	0.5626	1.39952	0.0000851	326.10	0.028	0.0001
FS172	FanDuct.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	5.854	530.41	2481.9	0.5626	1.39952	0.0000851	326.10	0.028	0.0001
FS173	Byp_Nozz.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	3.833	469.91	2006.9	1.0000	1.39952	0.0000851	326.10	0.028	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1078.79	1.702	0.9114	4139.469	1.1801	0.9178	-9525.9	36.68	23.09
LPC	202.77	2.509	0.8319	4139.469	1.3609	0.8520	-3594.1	2.97	2.24
HPC	95.27	12.851	0.8589	10303.595	2.1844	0.8977	-16671.2	27.03	26.21
HPT	12.10	4.268	0.9122	214.505	1.3415	0.8904	16671.1		
LPT	55.83	4.333	0.9168	90.590	1.3872	0.9007	13120.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1253.45	1.686	0.9132	4100.000	0.0639	0.8607	1.0235	0.9980	0.9905
LPC	166.84	2.748	0.8341	1.093	0.0000	1.2153	0.8633	0.9974	0.0003
HPC	86.64	12.293	0.8678	10028.908	13.3993	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.178	0.9121	1.289	4.1778	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.507	0.9236	1.019	3.5068	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3907.84	9506.6

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4726	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.3204	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11594.5	7551.7	16671.1
LP_Shaft	3973.5	17341.9	13120.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.2684	1054.43	92.55	31.473
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.7212	1054.43	92.55	7.264
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	1015.39	82.75	38.597
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1254.40	143.48	89.320
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	1015.39	82.75	38.597
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1434.67	190.50	137.506
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	1015.39	82.75	38.597

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	656.78	-5.40	10.700
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	7.0381	1434.67	190.50	134.340
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	6.1585	1434.67	190.50	75.500
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1434.67	190.50	137.506
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1434.67	190.50	137.506
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1434.67	190.50	137.506
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2921.68	0.9995	0.0230	1.15802	0.02562

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.545	0.9809	1.0000	0.9800	613.40	1.000	1624.7	3806.9
Byp_Nozz	2.543	0.9810	1.0000	0.9800	2006.86	1.000	1041.7	12523.7

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Date:05/10/13 Time:11:38:42 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 20/ 34/ 1/18 Run by: Philip C Jorgenson PC: 84
Temperature Stator 1 inlet: 470.84 Stator 1 exit: 489.03 Stator 2 inlet: 510.79 Stator 2 exit: 519.44
Stator 3 inlet: 546.19 Stator 3 exit: 555.04 Stator 4 inlet: 580.14 Stator 4 exit: 588.35
Stator 5 inlet: 608.21 Stator 5 exit: 616.00 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	4.46		
Fan Bypass Relative Humidity	0.23		
LPC Inlet Relative Humidity	2.21		
LPC Exit Relative Humidity	0.03		
HPC Relative Humidity	0.01		
Drop Diameter	0.0000050	Inlet Length	40.00
Ambient Flow Velocity	789.49	Fan/LPC Inlet Flow Velocity	453.72
Ambient Static Pressure	2.85	Fan/LPC Inlet Static Pressure	3.75
Ambient Static Temperature	425.97	Fan/LPC Inlet Static Temperature	460.77
Additional Water at LPC Exit	0.0060986		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	371.95	5928.8	0.6037	3578.97	5.4660	789.49	29.417	1.518	84.000	2770.0	2603.3	1812.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	371.95	4.267	477.92	-16.44	0.0000	1229.75	2.854	425.97	3751.7	0.7800	1.40068	0.0000851	371.92	0.032	0.0001
FS1	Inlet.Fl_O	371.95	4.267	477.92	-16.44	0.0000	1229.75	3.286	443.51	4168.2	0.6222	1.40068	0.0000851	371.92	0.032	0.0001
FS12	Splitter.Fl_02	314.42	4.265	477.92	-16.44	0.0000	1040.08	3.290	443.71	3531.8	0.6202	1.40068	0.0000851	314.40	0.027	0.0001
FS2	Splitter.Fl_01	57.52	4.265	477.92	-16.44	0.0000	190.28	3.753	460.77	830.5	0.4310	1.40068	0.0000851	57.52	0.005	0.0001
FS14	Fan.Fl_O	314.42	6.950	556.40	2.39	0.0000	688.65	5.769	527.58	2606.7	0.5226	1.39965	0.0000851	314.40	0.027	0.0001
FS23	LPC.Fl_O	57.52	10.537	642.64	23.13	0.0000	89.30	9.430	622.64	412.6	0.4017	1.39771	0.0000851	57.52	0.005	0.0001
FS24	VaporIN.Fl_O	57.87	10.537	649.67	-10.01	0.0000	90.34	9.395	628.83	412.6	0.4086	1.39665	0.0061837	57.52	0.356	0.0061
FS25	Bleed2.Fl_O	57.87	10.537	649.67	-10.01	0.0000	90.34	9.395	628.83	412.6	0.4086	1.39665	0.0061837	57.52	0.356	0.0061
FS3	HPC.Fl_O	55.07	125.513	1388.23	175.50	0.0000	10.55	112.778	1349.71	49.7	0.3998	1.35562	0.0061837	54.73	0.338	0.0061
FS36	Bleed3.Fl_O	42.68	125.513	1388.23	175.50	0.0000	8.18	118.129	1366.30	49.3	0.3002	1.35562	0.0061837	42.41	0.262	0.0061
FS4	Burner.Fl_O	43.67	122.622	2769.97	147.19	0.0234	12.10	115.818	2734.61	74.6	0.3006	1.28550	0.0061837	42.41	0.262	0.0341
FS45	HPT.Fl_O	58.19	28.636	1820.51	-29.16	0.0175	55.95	25.773	1774.29	265.4	0.4017	1.32165	0.0061837	56.85	0.352	0.0271
FS49	LPT.Fl_O	58.87	6.605	1305.16	-167.09	0.0173	207.77	5.697	1256.03	860.2	0.4723	1.34882	0.0061837	57.52	0.356	0.0269
FS5	TEGV.Fl_O	58.87	6.605	1305.22	-167.09	0.0173	207.77	5.697	1256.09	860.2	0.4723	1.34882	0.0061837	57.52	0.356	0.0269
FS8	Core_Nozz.Fl_O	58.87	6.605	1305.35	-167.09	0.0173	207.78	3.531	1107.79	613.4	1.0000	1.34881	0.0061837	57.52	0.356	0.0269
FS17	FanDuctLkg.Fl_O	314.42	6.950	556.40	2.39	0.0000	688.65	5.769	527.58	2606.7	0.5226	1.39965	0.0000851	314.40	0.027	0.0001
FS171	Bleed15.Fl_O	314.42	6.950	556.40	2.39	0.0000	688.65	5.606	523.28	2481.9	0.5626	1.39965	0.0000851	314.40	0.027	0.0001
FS172	FanDuct.Fl_O	314.42	6.950	556.40	2.39	0.0000	688.65	5.606	523.28	2481.9	0.5626	1.39965	0.0000851	314.40	0.027	0.0001
FS173	Byp_Nozz.Fl_O	314.42	6.950	556.40	2.39	0.0000	688.65	3.670	463.58	2006.9	1.0000	1.39965	0.0000851	314.40	0.027	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1040.08	1.630	0.9122	3986.202	1.1642	0.9180	-8375.0	51.41	26.07
LPC	190.28	2.471	0.8549	3986.202	1.3447	0.8720	-3220.3	2.91	2.10
HPC	90.34	11.911	0.8611	10157.437	2.1368	0.8985	-14821.5	30.61	29.54
HPT	12.10	4.282	0.9108	215.996	1.3473	0.8901	14821.5		
LPT	55.95	4.335	0.9149	89.680	1.3918	0.8981	11596.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1208.47	1.615	0.9140	3948.195	0.0614	0.8607	1.0235	0.9980	0.9905
LPC	152.70	2.579	0.8241	1.053	0.0000	1.2463	0.9316	1.0373	0.0003
HPC	82.16	11.397	0.8700	9886.647	13.0781	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.191	0.9108	1.298	4.1911	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.509	0.9217	1.009	3.5086	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3751.73	9126.8

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4723	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4660	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11368.0	6847.7	14821.5
LP_Shaft	3826.4	15916.7	11596.0

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.1298	1026.69	82.75	28.636
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6771	1026.69	82.75	6.605
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	989.63	73.47	35.832
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1216.73	130.98	81.822
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	989.63	73.47	35.832
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1388.23	175.50	125.513
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	989.63	73.47	35.832

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	649.67	-10.01	10.537
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.6081	1388.23	175.50	122.622
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.7822	1388.23	175.50	68.862
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1388.23	175.50	125.513
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1388.23	175.50	125.513
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1388.23	175.50	125.513
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	556.40	2.39	6.950
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	556.40	2.39	6.950
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	556.40	2.39	6.950
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	556.40	2.39	6.950

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2769.97	0.9995	0.0230	0.99416	0.02344

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.314	0.9816	1.0000	0.9800	613.40	1.000	1579.6	3305.7
Byp_Nozz	2.435	0.9814	1.0000	0.9800	2006.86	1.000	1034.7	11750.0

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**********************************************************************************************************************************
Date:05/10/13    Time:11:39:17    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 20/ 34/ 1/18    Run by: Philip C Jorgenson      PC:    79
Temperature Stator 1 inlet: 472.55    Stator 1 exit: 490.30    Stator 2 inlet: 511.72    Stator 2 exit: 520.48
            Stator 3 inlet: 546.36    Stator 3 exit: 555.19    Stator 4 inlet: 579.49    Stator 4 exit: 587.65
            Stator 5 inlet: 606.98    Stator 5 exit: 614.67            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.21
Fan Bypass Relative Humidity       0.25
LPC Inlet Relative Humidity        2.13
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.01
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        440.91
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.78
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   461.72
Additional Water at LPC Exit   0.0062973
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	366.73	5636.1	0.6026	3396.21	5.5267	789.49	28.478	1.457	79.800	2722.5	2559.4	1780.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	366.73	4.267	477.92	-16.44	0.0000	1212.50	2.854	425.97	3699.1	0.7800	1.40068	0.0000851	366.70	0.031	0.0001
FS1	Inlet.Fl_O	366.73	4.267	477.92	-16.44	0.0000	1212.50	3.326	445.04	4168.2	0.6072	1.40068	0.0000851	366.70	0.031	0.0001
FS12	Splitter.Fl_02	310.54	4.265	477.92	-16.44	0.0000	1027.24	3.324	445.05	3531.8	0.6071	1.40068	0.0000851	310.51	0.026	0.0001
FS2	Splitter.Fl_01	56.19	4.265	477.92	-16.44	0.0000	185.87	3.780	461.72	830.5	0.4184	1.40068	0.0000851	56.18	0.005	0.0001
FS14	Fan.Fl_O	310.54	6.848	553.91	1.79	0.0000	688.65	5.685	525.22	2606.7	0.5226	1.39969	0.0000851	310.51	0.026	0.0001
FS23	LPC.Fl_O	56.19	10.470	640.36	22.58	0.0000	87.63	9.416	621.30	412.6	0.3925	1.39778	0.0000851	56.18	0.005	0.0001
FS24	VaporIN.Fl_O	56.54	10.470	647.64	-11.63	0.0000	88.68	9.382	627.76	412.6	0.3994	1.39668	0.0063824	56.18	0.359	0.0063
FS25	Bleed2.Fl_O	56.54	10.470	647.64	-11.63	0.0000	88.68	9.382	627.76	412.6	0.3994	1.39668	0.0063824	56.18	0.359	0.0063
FS3	HPC.Fl_O	53.80	121.507	1373.71	170.60	0.0000	10.59	109.067	1335.19	49.7	0.4016	1.35643	0.0063824	53.46	0.341	0.0063
FS36	Bleed3.Fl_O	41.70	121.507	1373.71	170.60	0.0000	8.21	114.299	1351.77	49.3	0.3014	1.35643	0.0063824	41.43	0.264	0.0063
FS4	Burner.Fl_O	42.64	118.709	2722.47	143.23	0.0228	12.09	112.117	2687.59	74.6	0.3004	1.28726	0.0063824	41.43	0.264	0.0335
FS45	HPT.Fl_O	56.82	27.696	1788.41	-30.20	0.0170	55.99	24.922	1742.75	265.4	0.4018	1.32336	0.0063824	55.53	0.354	0.0267
FS49	LPT.Fl_O	57.49	6.387	1280.76	-165.54	0.0168	207.85	5.508	1232.31	860.2	0.4722	1.35064	0.0063824	56.18	0.359	0.0265
FS5	TEGV.Fl_O	57.49	6.387	1280.82	-165.54	0.0168	207.85	5.508	1232.37	860.2	0.4722	1.35063	0.0063824	56.18	0.359	0.0265
FS8	Core_Nozz.Fl_O	57.49	6.387	1280.95	-165.54	0.0168	207.87	3.413	1086.26	613.4	1.0000	1.35062	0.0063824	56.18	0.359	0.0265
FS17	FanDuctLkg.Fl_O	310.54	6.848	553.91	1.79	0.0000	688.65	5.685	525.22	2606.7	0.5226	1.39969	0.0000851	310.51	0.026	0.0001
FS171	Bleed15.Fl_O	310.54	6.848	553.91	1.79	0.0000	688.65	5.525	520.94	2481.9	0.5626	1.39969	0.0000851	310.51	0.026	0.0001
FS172	FanDuct.Fl_O	310.54	6.848	553.91	1.79	0.0000	688.65	5.525	520.94	2481.9	0.5626	1.39969	0.0000851	310.51	0.026	0.0001
FS173	Byp_Nozz.Fl_O	310.54	6.848	553.91	1.79	0.0000	688.65	3.617	461.51	2006.9	1.0000	1.39969	0.0000851	310.51	0.026	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1027.24	1.606	0.9118	3938.129	1.1590	0.9175	-8009.1	56.02	27.11
LPC	185.87	2.455	0.8600	3938.129	1.3399	0.8764	-3101.8	3.20	2.45
HPC	88.68	11.605	0.8614	10111.890	2.1211	0.8985	-14224.3	31.85	30.67
HPT	12.09	4.286	0.9102	216.556	1.3491	0.8899	14224.3		
LPT	55.99	4.336	0.9143	89.390	1.3934	0.8977	11110.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1193.55	1.592	0.9137	3900.579	0.0606	0.8607	1.0235	0.9980	0.9905
LPC	149.29	2.529	0.8227	1.040	0.0000	1.2450	0.9519	1.0454	0.0003
HPC	80.65	11.105	0.8703	9842.314	12.9732	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.195	0.9102	1.301	4.1951	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.509	0.9211	1.006	3.5093	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3699.11	8998.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4722	860.21
FanDuct	0.0000	0.5626	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5267	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11299.3	6611.7	14224.3
LP_Shaft	3780.3	15436.9	11110.9

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.0808	1018.12	79.49	27.696
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.6616	1018.12	79.49	6.387
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	981.68	70.37	34.898
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1205.00	126.86	79.313
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	981.68	70.37	34.898
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1373.71	170.60	121.507
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	981.68	70.37	34.898

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	647.64	-11.63	10.470
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	6.4561	1373.71	170.60	118.709
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	5.6492	1373.71	170.60	66.649
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1373.71	170.60	121.507
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1373.71	170.60	121.507
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1373.71	170.60	121.507
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	553.91	1.79	6.848
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	553.91	1.79	6.848
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	553.91	1.79	6.848
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	553.91	1.79	6.848

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2722.47	0.9995	0.0230	0.94339	0.02277

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.238	0.9816	1.0000	0.9800	613.40	1.000	1565.2	3139.5
Byp_Nozz	2.400	0.9814	1.0000	0.9800	2006.86	1.000	1032.4	11495.4

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**********************************************************************************************************************************
Date:05/10/13    Time:11:39:52    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 19/ 33/ 1/17    Run by: Philip C Jorgenson      PC:    76
Temperature Stator 1 inlet: 473.71    Stator 1 exit: 491.17    Stator 2 inlet: 512.37    Stator 2 exit: 521.20
            Stator 3 inlet: 546.52    Stator 3 exit: 555.35    Stator 4 inlet: 579.13    Stator 4 exit: 587.27
            Stator 5 inlet: 606.24    Stator 5 exit: 613.87            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.05
Fan Bypass Relative Humidity       0.26
LPC Inlet Relative Humidity        2.08
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.01
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        431.80
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.80
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   462.38
Additional Water at LPC Exit   0.0064518

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.780   39000.0    36.00    362.93     5427.7    0.6025    3270.15    5.5717    789.49    27.815     1.415       76.800      2689.4   2528.9   1758.0


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht       FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O          362.93     4.267    477.92    -16.44    0.0000   1199.93     2.854    425.97    3660.7  0.7800   1.40068   0.0000851    362.90    0.031    0.0001
FS1   Inlet.Fl_O            362.93     4.267    477.92    -16.44    0.0000   1199.93     3.353    446.10    4168.2  0.5966   1.40068   0.0000851    362.90    0.031    0.0001
FS12  Splitter.Fl_02        307.70     4.265    477.92    -16.44    0.0000   1017.85     3.349    445.98    3531.8  0.5978   1.40068   0.0000851    307.67    0.026    0.0001
FS2   Splitter.Fl_01         55.23     4.265    477.92    -16.44    0.0000    182.68     3.799    462.38     830.5  0.4095   1.40068   0.0000851     55.22    0.005    0.0001
FS14  Fan.Fl_O              307.70     6.775    552.16      1.37    0.0000    688.66     5.624    523.55    2606.7  0.5226   1.39972   0.0000851    307.67    0.026    0.0001
FS23  LPC.Fl_O               55.23    10.425    638.89     22.22    0.0000     86.40     9.408    620.50     412.6  0.3859   1.39782   0.0000851     55.22    0.005    0.0001
FS24  VaporIN.Fl_O           55.58    10.425    646.36    -12.81    0.0000     87.47     9.375    627.16     412.6  0.3927   1.39669   0.0065369     55.22    0.361    0.0065
FS25  Bleed2.Fl_O            55.58    10.425    646.36    -12.81    0.0000     87.47     9.375    627.16     412.6  0.3927   1.39669   0.0065369     55.22    0.361    0.0065
FS3   HPC.Fl_O               52.89   118.679   1363.70    167.12    0.0000     10.62   106.450   1325.14      49.7  0.4029   1.35699   0.0065369     52.54    0.343    0.0065
FS36  Bleed3.Fl_O            40.99   118.679   1363.70    167.12    0.0000      8.23   111.596   1341.76      49.3  0.3023   1.35699   0.0065369     40.72    0.266    0.0065
FS4   Burner.Fl_O            41.89   115.946   2689.43    140.40    0.0223     12.09   109.507   2654.85      74.6  0.3002   1.28848   0.0065369     40.72    0.266    0.0331
FS45  HPT.Fl_O               55.84    27.033   1766.10    -30.98    0.0166     56.01    24.323   1720.82     265.4  0.4019   1.32457   0.0065369     54.57    0.357    0.0265
FS49  LPT.Fl_O               56.49     6.233   1263.92   -164.52    0.0164    207.91     5.375   1215.96     860.2  0.4722   1.35191   0.0065369     55.22    0.361    0.0262
FS5   TEGV.Fl_O              56.49     6.233   1263.99   -164.52    0.0164    207.91     5.375   1216.02     860.2  0.4722   1.35190   0.0065369     55.22    0.361    0.0262
FS8   Core_Nozz.Fl_O         56.49     6.233   1264.12   -164.52    0.0164    207.92     3.330   1071.44     613.4  1.0000   1.35189   0.0065369     55.22    0.361    0.0262
FS17  FanDuctLkg.Fl_O       307.70     6.775    552.16      1.37    0.0000    688.66     5.624    523.55    2606.7  0.5226   1.39972   0.0000851    307.67    0.026    0.0001
FS171 Bleed15.Fl_O          307.70     6.775    552.16      1.37    0.0000    688.66     5.465    519.29    2481.9  0.5626   1.39972   0.0000851    307.67    0.026    0.0001
FS172 FanDuct.Fl_O          307.70     6.775    552.16      1.37    0.0000    688.66     5.465    519.29    2481.9  0.5626   1.39972   0.0000851    307.67    0.026    0.0001
FS173 Byp_Nozz.Fl_O         307.70     6.775    552.16      1.37    0.0000    688.66     3.578    460.04    2006.9  1.0000   1.39972   0.0000851    307.67    0.026    0.0001

TURBOMACHINERY PERFORMANCE DATA
                Wc      PR       eff         Nc        TR    efPoly         pwr       SMN       SMW
Fan        1017.85   1.589    0.9108   3905.459    1.1553    0.9164     -7752.1     58.14     27.87
LPC         182.68   2.445    0.8631   3905.459    1.3368    0.8791     -3021.0      3.47      2.76
HPC          87.47  11.384    0.8614  10078.845    2.1098    0.8983    -13806.9     32.74     31.50
HPT          12.09   4.289    0.9097    216.957    1.3504    0.8898     13806.9
LPT          56.01   4.337    0.9138     89.207    1.3944    0.8971     10773.1

TURBOMACHINERY MAP DATA
             WcMap    PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan        1182.64   1.575    0.9126   3868.221    0.0600      0.8607    1.0235    0.9980    0.9905
LPC         147.18   2.495    0.8220      1.032    0.0000      1.2412    0.9662    1.0500    0.0003
HPC          79.55  10.895    0.8703   9810.149   12.8977      1.0995    1.0494    0.9898    0.9733
HPT           0.96   4.198    0.9097      1.304    4.1978     12.6299    0.9723    1.0000    0.0003
LPT           0.86   3.510    0.9206      1.003    3.5098     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3660.74	8905.5
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4722	860.21
FanDuct	0.0000	0.5626	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5717	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11251.3	6445.0	13806.9
LP_Shaft	3748.9	15092.9	10773.1

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.0454	1012.27	77.16	27.033
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.6503	1012.27	77.16	6.233
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	976.27	68.16	34.241
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1196.94	123.94	77.543
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	976.27	68.16	34.241
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1363.70	167.12	118.679
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	976.27	68.16	34.241

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	646.36	-12.81	10.425
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	6.3463	1363.70	167.12	115.946
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	5.5532	1363.70	167.12	65.088
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1363.70	167.12	118.679
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1363.70	167.12	118.679
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1363.70	167.12	118.679
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	552.16	1.37	6.775
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	552.16	1.37	6.775
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	552.16	1.37	6.775
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	552.16	1.37	6.775

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2689.42	0.9995	0.0230	0.90837	0.02231

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.184	0.9816	1.0000	0.9800	613.40	1.000	1555.2	3022.4
Byp_Nozz	2.374	0.9815	1.0000	0.9800	2006.86	1.000	1030.7	11310.8

10μm, ISA +18R

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**********************************************************************************************************************************
Date:05/13/13    Time:07:04:22    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 23/ 51/ 2/20    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 444.20    Stator 1 exit: 462.85    Stator 2 inlet: 484.44    Stator 2 exit: 491.60
            Stator 3 inlet: 520.52    Stator 3 exit: 528.49    Stator 4 inlet: 555.54    Stator 4 exit: 563.26
            Stator 5 inlet: 584.14    Stator 5 exit: 591.68            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.21
Fan Bypass Relative Humidity       0.15
LPC Inlet Relative Humidity        2.29
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          772.64    Fan/LPC Inlet Flow Velocity        484.89
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.66
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   438.14
Additional Water at LPC Exit   0.0007415
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	396.30	6797.5	0.5971	4058.61	5.2856	772.64	32.328	1.706	100.000	2814.2	2641.1	1835.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	396.30	4.267	457.74	-20.96	0.0000	1282.27	2.854	407.97	3911.8	0.7800	1.40084	0.0000295	396.29	0.012	0.0000
FS1	Inlet.Fl_O	396.30	4.267	457.74	-20.96	0.0000	1282.27	3.150	419.67	4168.2	0.6726	1.40084	0.0000295	396.29	0.012	0.0000
FS12	Splitter.Fl_02	333.25	4.265	457.74	-20.96	0.0000	1078.81	3.174	420.64	3531.8	0.6633	1.40084	0.0000295	333.24	0.010	0.0000
FS2	Splitter.Fl_01	63.05	4.265	457.74	-20.96	0.0000	204.10	3.660	438.14	830.5	0.4724	1.40084	0.0000295	63.05	0.002	0.0000
FS14	Fan.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	6.024	512.21	2606.7	0.5226	1.39992	0.0000295	333.24	0.010	0.0000
FS23	LPC.Fl_O	63.05	10.488	620.60	18.14	0.0000	96.64	9.163	597.17	412.6	0.4436	1.39831	0.0000295	63.05	0.002	0.0000
FS24	VaporIN.Fl_O	63.10	10.488	621.54	14.10	0.0000	96.78	9.158	597.98	412.6	0.4447	1.39818	0.0007710	63.05	0.049	0.0008
FS25	Bleed2.Fl_O	63.10	10.488	621.54	14.10	0.0000	96.78	9.158	597.98	412.6	0.4447	1.39818	0.0007710	63.05	0.049	0.0008
FS3	HPC.Fl_O	60.03	137.939	1374.13	201.80	0.0000	10.41	124.410	1337.20	49.7	0.3924	1.35732	0.0007710	59.99	0.046	0.0008
FS36	Bleed3.Fl_O	46.53	137.939	1374.13	201.80	0.0000	8.07	130.079	1353.03	49.3	0.2951	1.35732	0.0007710	46.49	0.036	0.0008
FS4	Burner.Fl_O	47.65	134.763	2814.20	171.65	0.0242	12.10	127.304	2778.46	74.6	0.3004	1.28466	0.0007710	46.49	0.036	0.0299
FS45	HPT.Fl_O	63.48	31.493	1844.04	-6.29	0.0181	55.86	28.368	1797.65	265.4	0.4002	1.32102	0.0007710	62.31	0.048	0.0227
FS49	LPT.Fl_O	64.22	7.239	1320.92	-145.95	0.0179	208.07	6.244	1271.28	860.2	0.4724	1.34817	0.0007710	63.05	0.049	0.0224
FS5	TEGV.Fl_O	64.22	7.239	1320.99	-145.95	0.0179	208.08	6.244	1271.34	860.2	0.4724	1.34817	0.0007710	63.05	0.049	0.0224
FS8	Core_Nozz.Fl_O	64.22	7.239	1321.11	-145.95	0.0179	208.09	3.871	1121.47	613.4	1.0000	1.34816	0.0007710	63.05	0.049	0.0224
FS17	FanDuctLkg.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	6.024	512.21	2606.7	0.5226	1.39992	0.0000295	333.24	0.010	0.0000
FS171	Bleed15.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	5.854	508.03	2481.9	0.5625	1.39992	0.0000295	333.24	0.010	0.0000
FS172	FanDuct.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	5.854	508.03	2481.9	0.5625	1.39992	0.0000295	333.24	0.010	0.0000
FS173	Byp_Nozz.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	3.833	450.06	2006.9	1.0000	1.39992	0.0000295	333.24	0.010	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1078.81	1.702	0.9114	4139.469	1.1801	0.9178	-9322.3	36.69	23.09
LPC	204.10	2.459	0.8238	4139.469	1.3558	0.8444	-3487.4	2.97	2.24
HPC	96.78	13.153	0.8584	10365.299	2.2109	0.8979	-16349.9	25.94	25.16
HPT	12.10	4.279	0.9118	213.891	1.3468	0.8911	16349.9		
LPT	55.86	4.351	0.9155	90.557	1.3925	0.8988	12809.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1253.47	1.686	0.9132	4100.000	0.0639	0.8607	1.0235	0.9980	0.9905
LPC	166.84	2.748	0.8341	1.093	0.0000	1.2233	0.8348	0.9876	0.0003
HPC	88.02	12.580	0.8673	10088.967	13.5045	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.188	0.9118	1.285	4.1882	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.520	0.9223	1.019	3.5201	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3911.78	9516.8

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4724	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2856	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11346.7	7568.0	16349.9
LP_Shaft	3888.7	17300.7	12809.7

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.3219	1005.68	107.95	31.493
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7382	1005.68	107.95	7.239
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	967.90	98.57	38.527
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1199.38	156.76	89.508
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	967.90	98.57	38.527
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1374.13	201.80	137.939
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	967.90	98.57	38.527

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	621.54	14.10	10.488
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.2042	1374.13	201.80	134.763
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.3038	1374.13	201.80	75.693
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1374.13	201.80	137.939
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1374.13	201.80	137.939
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1374.13	201.80	137.939
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2814.20	0.9995	0.0230	1.12739	0.02425

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.536	0.9809	1.0000	0.9800	613.40	1.000	1586.4	3790.4
Byp_Nozz	2.543	0.9810	1.0000	0.9800	2006.86	1.000	1019.5	12523.9

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*****************************************************************************************************************************
Date:05/13/13    Time:07:05:00    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 21/ 35/ 1/19    Run by: Philip C Jorgenson      PC:    84
Temperature Stator 1 inlet: 450.34    Stator 1 exit: 467.50    Stator 2 inlet: 487.90    Stator 2 exit: 495.85
            Stator 3 inlet: 521.31    Stator 3 exit: 529.50    Stator 4 inlet: 553.54    Stator 4 exit: 561.15
            Stator 5 inlet: 580.11    Stator 5 exit: 587.37            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.13
Fan Bypass Relative Humidity       0.18
LPC Inlet Relative Humidity        2.00
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          772.64    Fan/LPC Inlet Flow Velocity        444.99
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.75
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   441.23
Additional Water at LPC Exit   0.0008168
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	378.72	5804.3	0.5902	3425.49	5.4316	772.64	29.234	1.498	84.000	2647.6	2487.0	1723.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	378.72	4.267	457.74	-20.96	0.0000	1225.39	2.854	407.97	3738.3	0.7800	1.40084	0.0000295	378.71	0.011	0.0000
FS1	Inlet.Fl_O	378.72	4.267	457.74	-20.96	0.0000	1225.39	3.296	425.16	4168.2	0.6183	1.40084	0.0000295	378.71	0.011	0.0000
FS12	Splitter.Fl_02	319.83	4.265	457.74	-20.96	0.0000	1035.38	3.303	425.45	3531.8	0.6153	1.40084	0.0000295	319.82	0.009	0.0000
FS2	Splitter.Fl_01	58.88	4.265	457.74	-20.96	0.0000	190.62	3.751	441.23	830.5	0.4320	1.40084	0.0000295	58.88	0.002	0.0000
FS14	Fan.Fl_O	319.83	6.913	532.10	-3.13	0.0000	688.70	5.738	504.53	2606.7	0.5226	1.40004	0.0000295	319.82	0.009	0.0000
FS23	LPC.Fl_O	58.88	10.356	612.59	16.21	0.0000	90.81	9.225	592.72	412.6	0.4100	1.39851	0.0000295	58.88	0.002	0.0000
FS24	VaporIN.Fl_O	58.93	10.356	613.62	11.76	0.0000	90.96	9.220	593.63	412.6	0.4110	1.39837	0.0008462	58.88	0.050	0.0008
FS25	Bleed2.Fl_O	58.93	10.356	613.62	11.76	0.0000	90.96	9.220	593.63	412.6	0.4110	1.39837	0.0008462	58.88	0.050	0.0008
FS3	HPC.Fl_O	56.07	124.735	1322.38	187.94	0.0000	10.55	112.130	1285.51	49.7	0.3983	1.36038	0.0008462	56.03	0.047	0.0008
FS36	Bleed3.Fl_O	43.46	124.735	1322.38	187.94	0.0000	8.18	117.423	1301.37	49.3	0.2991	1.36038	0.0008462	43.42	0.037	0.0008
FS4	Burner.Fl_O	44.41	121.862	2647.58	161.07	0.0219	12.10	115.103	2613.42	74.6	0.2996	1.29090	0.0008462	43.42	0.037	0.0272
FS45	HPT.Fl_O	59.19	28.387	1731.31	-6.59	0.0164	55.99	25.553	1686.86	265.4	0.4004	1.32716	0.0008462	58.19	0.049	0.0207
FS49	LPT.Fl_O	59.88	6.518	1235.69	-137.13	0.0162	208.40	5.620	1188.48	860.2	0.4721	1.35461	0.0008462	58.88	0.050	0.0204
FS5	TEGV.Fl_O	59.88	6.518	1235.75	-137.13	0.0162	208.40	5.620	1188.55	860.2	0.4721	1.35461	0.0008462	58.88	0.050	0.0204
FS8	Core_Nozz.Fl_O	59.88	6.518	1235.88	-137.13	0.0162	208.41	3.479	1046.35	613.4	1.0000	1.35460	0.0008462	58.88	0.050	0.0204
FS17	FanDuctLkg.Fl_O	319.83	6.913	532.10	-3.13	0.0000	688.70	5.738	504.53	2606.7	0.5226	1.40004	0.0000295	319.82	0.009	0.0000
FS171	Bleed15.Fl_O	319.83	6.913	532.10	-3.13	0.0000	688.70	5.576	500.41	2481.9	0.5625	1.40004	0.0000295	319.82	0.009	0.0000
FS172	FanDuct.Fl_O	319.83	6.913	532.10	-3.13	0.0000	688.70	5.576	500.41	2481.9	0.5625	1.40004	0.0000295	319.82	0.009	0.0000
FS173	Byp_Nozz.Fl_O	319.83	6.913	532.10	-3.13	0.0000	688.70	3.651	443.30	2006.9	1.0000	1.40004	0.0000295	319.82	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1035.38	1.621	0.9117	3969.398	1.1625	0.9175	-8068.0	52.98	26.45
LPC	190.62	2.428	0.8528	3969.398	1.3383	0.8699	-3096.3	2.95	2.15
HPC	90.96	12.045	0.8607	10175.576	2.1551	0.8986	-14333.9	29.96	28.94
HPT	12.10	4.293	0.9099	215.099	1.3532	0.8903	14333.9		
LPT	55.99	4.355	0.9131	89.619	1.3980	0.8962	11164.3		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1203.01	1.607	0.9135	3931.550	0.0611	0.8607	1.0235	0.9980	0.9905
LPC	151.31	2.561	0.8233	1.048	0.0000	1.2598	0.9151	1.0358	0.0003
HPC	82.73	11.524	0.8696	9904.302	13.1355	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.202	0.9099	1.293	4.2016	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.523	0.9199	1.008	3.5235	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3738.26	9094.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4721	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4316	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11067.8	6802.0	14333.9
LP_Shaft	3729.0	15724.4	11164.3

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.1687	974.80	99.85	28.387
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6895	974.80	99.85	6.518
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	939.22	91.04	35.519
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1157.42	145.66	81.271
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	939.22	91.04	35.519
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1322.38	187.94	124.735
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	939.22	91.04	35.519

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	613.62	11.76	10.356
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.7289	1322.38	187.94	121.862
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.8879	1322.38	187.94	68.395
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1322.38	187.94	124.735
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1322.38	187.94	124.735
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1322.38	187.94	124.735
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	532.10	-3.13	6.913
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	532.10	-3.13	6.913
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	532.10	-3.13	6.913
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	532.10	-3.13	6.913

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2647.56	0.9995	0.0230	0.95152	0.02191

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.284	0.9816	1.0000	0.9800	613.40	1.000	1535.8	3241.8
Byp_Nozz	2.422	0.9814	1.0000	0.9800	2006.86	1.000	1011.8	11657.2

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**********************************************************************************************************************************
Date:05/13/13    Time:07:05:36    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 20/ 34/ 1/18    Run by: Philip C Jorgenson      PC:    79
Temperature Stator 1 inlet: 451.95    Stator 1 exit: 468.71    Stator 2 inlet: 488.79    Stator 2 exit: 496.87
            Stator 3 inlet: 521.51    Stator 3 exit: 529.72    Stator 4 inlet: 553.00    Stator 4 exit: 560.57
            Stator 5 inlet: 579.02    Stator 5 exit: 586.21            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.88
Fan Bypass Relative Humidity       0.20
LPC Inlet Relative Humidity        1.92
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          772.64    Fan/LPC Inlet Flow Velocity        432.78
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.78
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   442.13
Additional Water at LPC Exit   0.0008427
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	373.41	5513.2	0.5893	3249.09	5.4875	772.64	28.307	1.439	79.800	2600.1	2443.2	1691.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	373.41	4.267	457.74	-20.96	0.0000	1208.21	2.854	407.97	3685.8	0.7800	1.40084	0.0000295	373.40	0.011	0.0000
FS1	Inlet.Fl_O	373.41	4.267	457.74	-20.96	0.0000	1208.21	3.336	426.59	4168.2	0.6035	1.40084	0.0000295	373.40	0.011	0.0000
FS12	Splitter.Fl_02	315.85	4.265	457.74	-20.96	0.0000	1022.48	3.337	426.71	3531.8	0.6023	1.40084	0.0000295	315.84	0.009	0.0000
FS2	Splitter.Fl_01	57.56	4.265	457.74	-20.96	0.0000	186.33	3.778	442.13	830.5	0.4197	1.40084	0.0000295	57.56	0.002	0.0000
FS14	Fan.Fl_O	315.85	6.811	529.69	-3.70	0.0000	688.70	5.654	502.24	2606.7	0.5226	1.40008	0.0000295	315.84	0.009	0.0000
FS23	LPC.Fl_O	57.56	10.300	610.43	15.69	0.0000	89.09	9.224	591.52	412.6	0.4004	1.39856	0.0000295	57.56	0.002	0.0000
FS24	VaporIN.Fl_O	57.61	10.300	611.50	11.10	0.0000	89.24	9.219	592.47	412.6	0.4014	1.39841	0.0008721	57.56	0.050	0.0009
FS25	Bleed2.Fl_O	57.61	10.300	611.50	11.10	0.0000	89.24	9.219	592.47	412.6	0.4014	1.39841	0.0008721	57.56	0.050	0.0009
FS3	HPC.Fl_O	54.81	120.781	1307.56	183.97	0.0000	10.59	108.469	1270.71	49.7	0.4000	1.36127	0.0008721	54.77	0.048	0.0009
FS36	Bleed3.Fl_O	42.48	120.781	1307.56	183.97	0.0000	8.21	113.643	1286.58	49.3	0.3002	1.36127	0.0008721	42.44	0.037	0.0009
FS4	Burner.Fl_O	43.38	117.999	2600.14	157.99	0.0213	12.10	111.454	2566.43	74.6	0.2993	1.29270	0.0008721	42.44	0.037	0.0265
FS45	HPT.Fl_O	57.84	27.463	1699.57	-6.69	0.0159	56.02	24.718	1655.72	265.4	0.4004	1.32897	0.0008721	56.88	0.050	0.0201
FS49	LPT.Fl_O	58.51	6.304	1211.86	-134.67	0.0157	208.49	5.434	1165.36	860.2	0.4720	1.35642	0.0008721	57.56	0.050	0.0199
FS5	TEGV.Fl_O	58.51	6.304	1211.93	-134.67	0.0157	208.49	5.434	1165.42	860.2	0.4720	1.35642	0.0008721	57.56	0.050	0.0199
FS8	Core_Nozz.Fl_O	58.51	6.304	1212.06	-134.67	0.0157	208.50	3.363	1025.43	613.4	1.0000	1.35641	0.0008721	57.56	0.050	0.0199
FS17	FanDuctLkg.Fl_O	315.85	6.811	529.69	-3.70	0.0000	688.70	5.654	502.24	2606.7	0.5226	1.40008	0.0000295	315.84	0.009	0.0000
FS171	Bleed15.Fl_O	315.85	6.811	529.69	-3.70	0.0000	688.70	5.494	498.14	2481.9	0.5625	1.40008	0.0000295	315.84	0.009	0.0000
FS172	FanDuct.Fl_O	315.85	6.811	529.69	-3.70	0.0000	688.70	5.494	498.14	2481.9	0.5625	1.40008	0.0000295	315.84	0.009	0.0000
FS173	Byp_Nozz.Fl_O	315.85	6.811	529.69	-3.70	0.0000	688.70	3.597	441.29	2006.9	1.0000	1.40008	0.0000295	315.84	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1022.48	1.597	0.9114	3921.443	1.1572	0.9170	-7709.0	57.11	27.50
LPC	186.33	2.415	0.8589	3921.443	1.3336	0.8752	-2984.3	3.33	2.62
HPC	89.24	11.726	0.8613	10127.580	2.1383	0.8988	-13747.6	31.23	30.09
HPT	12.10	4.297	0.9091	215.655	1.3548	0.8897	13747.6		
LPT	56.02	4.356	0.9124	89.359	1.3995	0.8952	10693.3		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1188.02	1.583	0.9132	3884.052	0.0603	0.8607	1.0235	0.9980	0.9905
LPC	148.21	2.511	0.8223	1.036	0.0000	1.2572	0.9364	1.0445	0.0003
HPC	81.17	11.221	0.8702	9857.585	13.0271	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.205	0.9090	1.296	4.2053	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.524	0.9191	1.005	3.5244	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3685.85	8967.1

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4875	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10996.6	6566.1	13747.6
LP_Shaft	3683.9	15245.3	10693.3

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.1199	966.04	97.54	27.463
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6740	966.04	97.54	6.304
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	931.10	88.89	34.606
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1145.44	142.48	78.798
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	931.10	88.89	34.606
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1307.56	183.97	120.781
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	931.10	88.89	34.606

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	611.50	11.10	10.300
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.5775	1307.56	183.97	117.999
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.7555	1307.56	183.97	66.212
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1307.56	183.97	120.781
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1307.56	183.97	120.781
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1307.56	183.97	120.781
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	529.69	-3.70	6.811
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	529.69	-3.70	6.811
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	529.69	-3.70	6.811
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	529.69	-3.70	6.811

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2600.12	0.9995	0.0230	0.90252	0.02126

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.209	0.9816	1.0000	0.9800	613.40	1.000	1521.3	3078.7
Byp_Nozz	2.387	0.9815	1.0000	0.9800	2006.86	1.000	1009.5	11401.7

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Date:05/13/13   Time:07:06:12   Model: Turbofan Engine - COMDES ON   converge = 1   CASE: 0
Version:NPSS_1.6.5 - Rev: ->   Gas Package: Janaf   iter/pass/Jacb/Broy= 20/ 34/ 1/18   Run by: Philip C Jorgenson   PC: 76
Temperature Stator 1 inlet: 453.04   Stator 1 exit: 469.53   Stator 2 inlet: 489.43   Stator 2 exit: 497.59
Stator 3 inlet: 521.69   Stator 3 exit: 529.91   Stator 4 inlet: 552.69   Stator 4 exit: 560.24
Stator 5 inlet: 578.36   Stator 5 exit: 585.50   Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.72		
Fan Bypass Relative Humidity	0.21		
LPC Inlet Relative Humidity	1.87		
LPC Exit Relative Humidity	0.02		
HPC Relative Humidity	0.00		
Drop Diameter	0.0000100	Inlet Length	40.00
Ambient Flow Velocity	772.64	Fan/LPC Inlet Flow Velocity	424.11
Ambient Static Pressure	2.85	Fan/LPC Inlet Static Pressure	3.80
Ambient Static Temperature	407.97	Fan/LPC Inlet Static Temperature	442.75
Additional Water at LPC Exit	0.0008620		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	369.50	5306.5	0.5897	3129.48	5.5280	772.64	27.657	1.397	76.800	2568.0	2413.5	1670.5

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	369.50	4.267	457.74	-20.96	0.0000	1195.55	2.854	407.97	3647.2	0.7800	1.40084	0.0000295	369.49	0.011	0.0000
FS1	Inlet.Fl_O	369.50	4.267	457.74	-20.96	0.0000	1195.55	3.363	427.60	4168.2	0.5930	1.40084	0.0000295	369.49	0.011	0.0000
FS12	Splitter.Fl_02	312.90	4.265	457.74	-20.96	0.0000	1012.92	3.362	427.60	3531.8	0.5929	1.40084	0.0000295	312.89	0.009	0.0000
FS2	Splitter.Fl_01	56.60	4.265	457.74	-20.96	0.0000	183.23	3.796	442.75	830.5	0.4110	1.40084	0.0000295	56.60	0.002	0.0000
FS14	Fan.Fl_O	312.90	6.737	528.05	-4.10	0.0000	688.70	5.592	500.68	2606.7	0.5226	1.40010	0.0000295	312.89	0.009	0.0000
FS23	LPC.Fl_O	56.60	10.260	609.04	15.36	0.0000	87.85	9.222	590.79	412.6	0.3936	1.39859	0.0000295	56.60	0.002	0.0000
FS24	VaporIN.Fl_O	56.65	10.260	610.14	10.66	0.0000	88.00	9.217	591.77	412.6	0.3946	1.39844	0.0008914	56.60	0.050	0.0009
FS25	Bleed2.Fl_O	56.65	10.260	610.14	10.66	0.0000	88.00	9.217	591.77	412.6	0.3946	1.39844	0.0008914	56.60	0.050	0.0009
FS3	HPC.Fl_O	53.90	118.005	1297.61	181.29	0.0000	10.62	105.903	1260.75	49.7	0.4012	1.36188	0.0008914	53.86	0.048	0.0009
FS36	Bleed3.Fl_O	41.77	118.005	1297.61	181.29	0.0000	8.23	110.991	1276.63	49.3	0.3011	1.36188	0.0008914	41.74	0.037	0.0009
FS4	Burner.Fl_O	42.64	115.288	2568.04	155.90	0.0208	12.10	108.891	2534.65	74.6	0.2991	1.29394	0.0008914	41.74	0.037	0.0260
FS45	HPT.Fl_O	56.86	26.816	1678.19	-6.76	0.0155	56.05	24.133	1634.72	265.4	0.4004	1.33020	0.0008914	55.94	0.050	0.0197
FS49	LPT.Fl_O	57.52	6.155	1195.86	-133.00	0.0154	208.55	5.305	1149.83	860.2	0.4719	1.35765	0.0008914	56.60	0.050	0.0195
FS5	TEGV.Fl_O	57.52	6.155	1195.93	-133.00	0.0154	208.55	5.305	1149.89	860.2	0.4719	1.35764	0.0008914	56.60	0.050	0.0195
FS8	Core_Nozz.Fl_O	57.52	6.155	1196.06	-133.00	0.0154	208.57	3.282	1011.39	613.4	1.0000	1.35763	0.0008914	56.60	0.050	0.0195
FS17	FanDuctLkg.Fl_O	312.90	6.737	528.05	-4.10	0.0000	688.70	5.592	500.68	2606.7	0.5226	1.40010	0.0000295	312.89	0.009	0.0000
FS171	Bleed15.Fl_O	312.90	6.737	528.05	-4.10	0.0000	688.70	5.434	496.59	2481.9	0.5625	1.40010	0.0000295	312.89	0.009	0.0000
FS172	FanDuct.Fl_O	312.90	6.737	528.05	-4.10	0.0000	688.70	5.434	496.59	2481.9	0.5625	1.40010	0.0000295	312.89	0.009	0.0000
FS173	Byp_Nozz.Fl_O	312.90	6.737	528.05	-4.10	0.0000	688.70	3.558	439.91	2006.9	1.0000	1.40010	0.0000295	312.89	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1012.92	1.580	0.9094	3888.842	1.1536	0.9151	-7462.2	59.24	28.27
LPC	183.23	2.406	0.8625	3888.842	1.3305	0.8783	-2908.0	3.61	2.87
HPC	88.00	11.501	0.8614	10094.302	2.1268	0.8986	-13344.0	32.12	30.91
HPT	12.10	4.299	0.9085	216.045	1.3560	0.8892	13344.1		
LPT	56.05	4.357	0.9118	89.179	1.4005	0.8946	10370.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1176.91	1.566	0.9113	3851.762	0.0597	0.8607	1.0235	0.9980	0.9905
LPC	146.11	2.478	0.8217	1.027	0.0000	1.2541	0.9513	1.0497	0.0003
HPC	80.04	11.006	0.8703	9825.195	12.9518	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.208	0.9085	1.298	4.2078	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.525	0.9186	1.003	3.5249	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3647.24	8873.2

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4719	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5280	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10948.3	6401.4	13344.1
LP_Shaft	3653.3	14908.6	10370.2

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.0848	960.19	95.97	26.816
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.6628	960.19	95.97	6.155
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	925.68	87.44	33.964
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1137.41	140.34	77.062
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	925.68	87.44	33.964
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1297.61	181.29	118.005
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	925.68	87.44	33.964

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	610.14	10.66	10.260
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	6.4684	1297.61	181.29	115.288
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	5.6600	1297.61	181.29	64.682
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1297.61	181.29	118.005
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1297.61	181.29	118.005
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1297.61	181.29	118.005
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	528.05	-4.10	6.737
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	528.05	-4.10	6.737
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	528.05	-4.10	6.737
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	528.05	-4.10	6.737

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2568.02	0.9995	0.0230	0.86930	0.02083

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.157	0.9815	1.0000	0.9800	613.40	1.000	1511.5	2964.7
Byp_Nozz	2.361	0.9815	1.0000	0.9800	2006.86	1.000	1008.0	11215.0

10μm, ISA +36R

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*****************************************************************************************************************************
Date:05/13/13    Time:07:24:08    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 24/ 38/ 1/22    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 463.97    Stator 1 exit: 483.46    Stator 2 inlet: 506.07    Stator 2 exit: 513.64
            Stator 3 inlet: 543.80    Stator 3 exit: 552.19    Stator 4 inlet: 580.37    Stator 4 exit: 588.48
            Stator 5 inlet: 610.26    Stator 5 exit: 618.17            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.44
Fan Bypass Relative Humidity       0.19
LPC Inlet Relative Humidity        2.52
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        494.89
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.66
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   457.51
Additional Water at LPC Exit   0.0010505
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	387.77	6807.3	0.6127	4171.04	5.2905	789.49	32.263	1.709	100.000	2922.2	2743.4	1912.5

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	387.77	4.267	477.92	-16.44	0.0000	1282.06	2.854	425.97	3911.3	0.7800	1.40068	0.0000851	387.74	0.033	0.0001
FS1	Inlet.Fl_O	387.77	4.267	477.92	-16.44	0.0000	1282.06	3.151	438.20	4168.2	0.6725	1.40068	0.0000851	387.74	0.033	0.0001
FS12	Splitter.Fl_02	326.13	4.265	477.92	-16.44	0.0000	1078.79	3.174	439.19	3531.8	0.6634	1.40068	0.0000851	326.10	0.028	0.0001
FS2	Splitter.Fl_01	61.64	4.265	477.92	-16.44	0.0000	203.91	3.661	457.51	830.5	0.4718	1.40068	0.0000851	61.64	0.005	0.0001
FS14	Fan.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	6.025	534.77	2606.7	0.5227	1.39952	0.0000851	326.10	0.028	0.0001
FS23	LPC.Fl_O	61.64	10.520	648.20	24.47	0.0000	96.27	9.203	623.99	412.6	0.4416	1.39756	0.0000851	61.64	0.005	0.0001
FS24	VaporIN.Fl_O	61.71	10.520	649.45	18.74	0.0000	96.47	9.195	625.06	412.6	0.4430	1.39737	0.0011356	61.64	0.070	0.0011
FS25	Bleed2.Fl_O	61.71	10.520	649.45	18.74	0.0000	96.47	9.195	625.06	412.6	0.4430	1.39737	0.0011356	61.64	0.070	0.0011
FS3	HPC.Fl_O	58.72	137.658	1428.86	214.09	0.0000	10.40	124.168	1390.75	49.7	0.3926	1.35413	0.0011356	58.65	0.067	0.0011
FS36	Bleed3.Fl_O	45.50	137.658	1428.86	214.09	0.0000	8.06	129.821	1407.11	49.3	0.2952	1.35413	0.0011356	45.45	0.052	0.0011
FS4	Burner.Fl_O	46.66	134.488	2922.17	182.01	0.0255	12.10	127.064	2885.43	74.6	0.3008	1.28077	0.0011356	45.45	0.052	0.0317
FS45	HPT.Fl_O	62.14	31.487	1921.74	-2.84	0.0190	55.83	28.365	1873.87	265.4	0.4007	1.31714	0.0011356	60.92	0.069	0.0241
FS49	LPT.Fl_O	62.87	7.253	1380.52	-148.68	0.0188	207.83	6.258	1329.20	860.2	0.4726	1.34395	0.0011356	61.64	0.070	0.0239
FS5	TEGV.Fl_O	62.87	7.253	1380.58	-148.68	0.0188	207.83	6.258	1329.26	860.2	0.4726	1.34394	0.0011356	61.64	0.070	0.0239
FS8	Core_Nozz.Fl_O	62.87	7.253	1380.71	-148.68	0.0188	207.84	3.883	1174.12	613.4	1.0000	1.34393	0.0011356	61.64	0.070	0.0239
FS17	FanDuctLkg.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	6.025	534.77	2606.7	0.5227	1.39952	0.0000851	326.10	0.028	0.0001
FS171	Bleed15.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	5.854	530.41	2481.9	0.5626	1.39952	0.0000851	326.10	0.028	0.0001
FS172	FanDuct.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	5.854	530.41	2481.9	0.5626	1.39952	0.0000851	326.10	0.028	0.0001
FS173	Byp_Nozz.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	3.833	469.91	2006.9	1.0000	1.39952	0.0000851	326.10	0.028	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1078.79	1.702	0.9114	4139.469	1.1801	0.9178	-9525.9	36.68	23.09
LPC	203.91	2.467	0.8251	4139.469	1.3563	0.8457	-3567.8	2.97	2.24
HPC	96.47	13.086	0.8585	10352.276	2.2001	0.8978	-16641.9	26.20	25.41
HPT	12.10	4.271	0.9122	214.295	1.3425	0.8903	16641.9		
LPT	55.83	4.341	0.9167	90.642	1.3885	0.9005	13093.6		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1253.45	1.686	0.9132	4100.000	0.0639	0.8607	1.0235	0.9980	0.9905
LPC	166.84	2.748	0.8341	1.093	0.0000	1.2221	0.8391	0.9892	0.0003
HPC	87.73	12.517	0.8674	10076.291	13.4793	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.181	0.9122	1.288	4.1806	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.513	0.9235	1.020	3.5132	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3911.32	9515.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4726	860.21
FanDuct	0.0000	0.5626	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2905	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11584.2	7545.2	16641.9
LP_Shaft	3973.5	17306.7	13093.6

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.2709	1047.82	116.41	31.487
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.7220	1047.82	116.41	7.253
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	1008.71	106.65	38.490
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1248.21	167.20	89.346
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	1008.71	106.65	38.490
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	1428.86	214.09	137.658
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	1008.71	106.65	38.490

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	649.45	18.74	10.520
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	7.0458	1428.86	214.09	134.488
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	6.1652	1428.86	214.09	75.571
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1428.86	214.09	137.658
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1428.86	214.09	137.658
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1428.86	214.09	137.658
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2922.17	0.9995	0.0230	1.15862	0.02549

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.541	0.9809	1.0000	0.9800	613.40	1.000	1620.9	3798.7
Byp_Nozz	2.543	0.9810	1.0000	0.9800	2006.86	1.000	1041.7	12523.7

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**********************************************************************************************************************************
Date:05/13/13    Time:07:24:44    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 20/ 34/ 1/18    Run by: Philip C Jorgenson      PC:    84
Temperature Stator 1 inlet: 469.82    Stator 1 exit: 487.88    Stator 2 inlet: 509.30    Stator 2 exit: 517.60
            Stator 3 inlet: 544.42    Stator 3 exit: 553.00    Stator 4 inlet: 578.30    Stator 4 exit: 586.27
            Stator 5 inlet: 606.20    Stator 5 exit: 613.82            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.45
Fan Bypass Relative Humidity       0.23
LPC Inlet Relative Humidity        2.24
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity            789.49    Fan/LPC Inlet Flow Velocity        457.71
Ambient Static Pressure            2.85    Fan/LPC Inlet Static Pressure        3.74
Ambient Static Temperature       425.97    Fan/LPC Inlet Static Temperature   460.46
Additional Water at LPC Exit     0.0011431
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	372.12	5898.4	0.6054	3571.07	5.4231	789.49	29.440	1.518	84.000	2764.0	2597.0	1805.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	372.12	4.267	477.92	-16.44	0.0000	1230.32	2.854	425.97	3753.5	0.7800	1.40068	0.0000851	372.09	0.032	0.0001
FS1	Inlet.Fl_O	372.12	4.267	477.92	-16.44	0.0000	1230.32	3.285	443.46	4168.2	0.6227	1.40068	0.0000851	372.09	0.032	0.0001
FS12	Splitter.Fl_02	314.19	4.265	477.92	-16.44	0.0000	1039.29	3.292	443.80	3531.8	0.6194	1.40068	0.0000851	314.16	0.027	0.0001
FS2	Splitter.Fl_01	57.93	4.265	477.92	-16.44	0.0000	191.64	3.744	460.46	830.5	0.4350	1.40068	0.0000851	57.93	0.005	0.0001
FS14	Fan.Fl_O	314.19	6.943	556.26	2.35	0.0000	688.65	5.764	527.45	2606.7	0.5226	1.39966	0.0000851	314.16	0.027	0.0001
FS23	LPC.Fl_O	57.93	10.389	640.38	22.58	0.0000	91.06	9.247	619.50	412.6	0.4115	1.39778	0.0000851	57.93	0.005	0.0001
FS24	VaporIN.Fl_O	58.00	10.389	641.75	16.35	0.0000	91.26	9.240	620.70	412.6	0.4129	1.39757	0.0012282	57.93	0.071	0.0012
FS25	Bleed2.Fl_O	58.00	10.389	641.75	16.35	0.0000	91.26	9.240	620.70	412.6	0.4129	1.39757	0.0012282	57.93	0.071	0.0012
FS3	HPC.Fl_O	55.19	125.614	1380.13	200.82	0.0000	10.53	112.958	1342.03	49.7	0.3981	1.35690	0.0012282	55.12	0.068	0.0012
FS36	Bleed3.Fl_O	42.77	125.614	1380.13	200.82	0.0000	8.16	118.273	1358.41	49.3	0.2990	1.35690	0.0012282	42.72	0.052	0.0012
FS4	Burner.Fl_O	43.76	122.721	2764.00	172.00	0.0232	12.10	115.930	2728.71	74.6	0.3000	1.28663	0.0012282	42.72	0.052	0.0291
FS45	HPT.Fl_O	58.31	28.642	1813.72	-3.22	0.0173	55.95	25.789	1767.73	265.4	0.4008	1.32277	0.0012282	57.25	0.070	0.0222
FS49	LPT.Fl_O	58.99	6.591	1298.42	-140.33	0.0171	208.13	5.684	1249.39	860.2	0.4722	1.34999	0.0012282	57.93	0.071	0.0219
FS5	TEGV.Fl_O	58.99	6.591	1298.49	-140.33	0.0171	208.13	5.684	1249.46	860.2	0.4722	1.34999	0.0012282	57.93	0.071	0.0220
FS8	Core_Nozz.Fl_O	58.99	6.591	1298.62	-140.33	0.0171	208.14	3.522	1101.53	613.4	1.0000	1.34998	0.0012282	57.93	0.071	0.0220
FS17	FanDuctLkg.Fl_O	314.19	6.943	556.26	2.35	0.0000	688.65	5.764	527.45	2606.7	0.5226	1.39966	0.0000851	314.16	0.027	0.0001
FS171	Bleed15.Fl_O	314.19	6.943	556.26	2.35	0.0000	688.65	5.601	523.15	2481.9	0.5626	1.39966	0.0000851	314.16	0.027	0.0001
FS172	FanDuct.Fl_O	314.19	6.943	556.26	2.35	0.0000	688.65	5.601	523.15	2481.9	0.5626	1.39966	0.0000851	314.16	0.027	0.0001
FS173	Byp_Nozz.Fl_O	314.19	6.943	556.26	2.35	0.0000	688.65	3.667	463.46	2006.9	1.0000	1.39966	0.0000851	314.16	0.027	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1039.29	1.628	0.9121	3983.460	1.1639	0.9179	-8353.4	51.66	26.14
LPC	191.64	2.436	0.8514	3983.460	1.3399	0.8687	-3198.7	2.91	2.10
HPC	91.26	12.091	0.8607	10183.487	2.1506	0.8985	-14771.2	29.85	28.84
HPT	12.10	4.285	0.9109	215.460	1.3487	0.8905	14771.3		
LPT	55.95	4.346	0.9148	89.786	1.3937	0.8982	11551.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1207.56	1.614	0.9139	3945.478	0.0614	0.8607	1.0235	0.9980	0.9905
LPC	152.44	2.576	0.8239	1.052	0.0000	1.2571	0.9113	1.0334	0.0003
HPC	83.00	11.569	0.8696	9912.002	13.1441	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.194	0.9109	1.295	4.1936	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.517	0.9216	1.010	3.5166	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3753.47	9131.1

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4722	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4231	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11327.5	6848.8	14771.3
LP_Shaft	3823.8	15866.9	11551.9

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.1344	1018.59	108.59	28.642
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.6786	1018.59	108.59	6.591
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	981.54	99.36	35.738
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1208.63	156.55	81.828
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	981.54	99.36	35.738
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1380.13	200.82	125.614
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	981.54	99.36	35.738

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	641.75	16.35	10.389
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	6.6225	1380.13	200.82	122.721
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	5.7949	1380.13	200.82	68.908
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1380.13	200.82	125.614
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1380.13	200.82	125.614
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1380.13	200.82	125.614
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	556.26	2.35	6.943
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	556.26	2.35	6.943
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	556.26	2.35	6.943
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	556.26	2.35	6.943

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2763.99	0.9995	0.0230	0.99196	0.02322

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.309	0.9816	1.0000	0.9800	613.40	1.000	1573.5	3295.0
Byp_Nozz	2.433	0.9814	1.0000	0.9800	2006.86	1.000	1034.6	11734.5

****

Date:05/13/13 Time:07:25:20 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 21/ 35/ 1/19 Run by: Philip C Jorgenson PC: 79
Temperature Stator 1 inlet: 471.54 Stator 1 exit: 489.16 Stator 2 inlet: 510.24 Stator 2 exit: 518.67
Stator 3 inlet: 544.60 Stator 3 exit: 553.19 Stator 4 inlet: 577.67 Stator 4 exit: 585.60
Stator 5 inlet: 604.98 Stator 5 exit: 612.52 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	4.20		
Fan Bypass Relative Humidity	0.25		
LPC Inlet Relative Humidity	2.16		
LPC Exit Relative Humidity	0.03		
HPC Relative Humidity	0.00		
Drop Diameter	0.0000100	Inlet Length	40.00
Ambient Flow Velocity	789.49	Fan/LPC Inlet Flow Velocity	445.14
Ambient Static Pressure	2.85	Fan/LPC Inlet Static Pressure	3.77
Ambient Static Temperature	425.97	Fan/LPC Inlet Static Temperature	461.41
Additional Water at LPC Exit	0.0011781		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	366.87	5602.3	0.6042	3385.05	5.4780	789.49	28.503	1.457	79.800	2713.8	2550.6	1771.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	366.87	4.267	477.92	-16.44	0.0000	1212.95	2.854	425.97	3700.5	0.7800	1.40068	0.0000851	366.84	0.031	0.0001
FS1	Inlet.Fl_O	366.87	4.267	477.92	-16.44	0.0000	1212.95	3.325	445.00	4168.2	0.6076	1.40068	0.0000851	366.84	0.031	0.0001
FS12	Splitter.Fl_02	310.23	4.265	477.92	-16.44	0.0000	1026.23	3.327	445.15	3531.8	0.6061	1.40068	0.0000851	310.21	0.026	0.0001
FS2	Splitter.Fl_01	56.63	4.265	477.92	-16.44	0.0000	187.34	3.771	461.41	830.5	0.4226	1.40068	0.0000851	56.63	0.005	0.0001
FS14	Fan.Fl_O	310.23	6.840	553.72	1.74	0.0000	688.65	5.678	525.04	2606.7	0.5226	1.39970	0.0000851	310.21	0.026	0.0001
FS23	LPC.Fl_O	56.63	10.331	638.03	22.02	0.0000	89.35	9.243	618.14	412.6	0.4020	1.39784	0.0000851	56.63	0.005	0.0001
FS24	VaporIN.Fl_O	56.70	10.331	639.45	15.59	0.0000	89.56	9.237	619.40	412.6	0.4033	1.39763	0.0012632	56.63	0.072	0.0013
FS25	Bleed2.Fl_O	56.70	10.331	639.45	15.59	0.0000	89.56	9.237	619.40	412.6	0.4033	1.39763	0.0012632	56.63	0.072	0.0013
FS3	HPC.Fl_O	53.95	121.614	1364.61	196.58	0.0000	10.57	109.247	1326.50	49.7	0.3999	1.35780	0.0012632	53.88	0.068	0.0013
FS36	Bleed3.Fl_O	41.81	121.614	1364.61	196.58	0.0000	8.20	114.444	1342.90	49.3	0.3002	1.35780	0.0012632	41.76	0.053	0.0013
FS4	Burner.Fl_O	42.75	118.813	2713.83	168.74	0.0225	12.10	112.236	2679.03	74.6	0.2998	1.28851	0.0012632	41.76	0.053	0.0283
FS45	HPT.Fl_O	56.98	27.704	1779.91	-3.36	0.0168	55.99	24.940	1734.52	265.4	0.4009	1.32460	0.0012632	55.97	0.071	0.0216
FS49	LPT.Fl_O	57.64	6.373	1272.88	-137.75	0.0166	208.23	5.495	1224.58	860.2	0.4722	1.35193	0.0012632	56.63	0.072	0.0214
FS5	TEGV.Fl_O	57.64	6.373	1272.94	-137.75	0.0166	208.24	5.495	1224.64	860.2	0.4722	1.35192	0.0012632	56.63	0.072	0.0214
FS8	Core_Nozz.Fl_O	57.64	6.373	1273.08	-137.74	0.0166	208.25	3.404	1079.01	613.4	1.0000	1.35191	0.0012632	56.63	0.072	0.0214
FS17	FanDuctLkg.Fl_O	310.23	6.840	553.72	1.74	0.0000	688.65	5.678	525.04	2606.7	0.5226	1.39970	0.0000851	310.21	0.026	0.0001
FS171	Bleed15.Fl_O	310.23	6.840	553.72	1.74	0.0000	688.65	5.518	520.76	2481.9	0.5626	1.39970	0.0000851	310.21	0.026	0.0001
FS172	FanDuct.Fl_O	310.23	6.840	553.72	1.74	0.0000	688.65	5.518	520.76	2481.9	0.5626	1.39970	0.0000851	310.21	0.026	0.0001
FS173	Byp_Nozz.Fl_O	310.23	6.840	553.72	1.74	0.0000	688.65	3.613	461.34	2006.9	1.0000	1.39970	0.0000851	310.21	0.026	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1026.23	1.604	0.9118	3934.513	1.1586	0.9175	-7980.7	56.27	27.19
LPC	187.34	2.422	0.8578	3934.513	1.3350	0.8742	-3081.4	3.23	2.49
HPC	89.56	11.772	0.8613	10135.831	2.1340	0.8987	-14166.9	31.13	30.01
HPT	12.10	4.289	0.9102	216.036	1.3505	0.8900	14167.0		
LPT	55.99	4.347	0.9141	89.521	1.3953	0.8974	11062.1		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1192.37	1.590	0.9136	3896.998	0.0606	0.8607	1.0235	0.9980	0.9905
LPC	149.06	2.525	0.8226	1.039	0.0000	1.2568	0.9328	1.0428	0.0003
HPC	81.45	11.265	0.8702	9865.617	13.0344	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.197	0.9102	1.298	4.1975	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.518	0.9208	1.007	3.5176	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3700.49	9002.2

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4722	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4780	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11254.3	6611.4	14167.0
LP_Shaft	3776.8	15383.2	11062.1

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.0865	1009.37	106.09	27.704
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6634	1009.37	106.09	6.373
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	972.97	97.04	34.813
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1196.05	153.14	79.326
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	972.97	97.04	34.813
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1364.61	196.58	121.614
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	972.97	97.04	34.813

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	639.45	15.59	10.331
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.4739	1364.61	196.58	118.813
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.6648	1364.61	196.58	66.699
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1364.61	196.58	121.614
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1364.61	196.58	121.614
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1364.61	196.58	121.614
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	553.72	1.74	6.840
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	553.72	1.74	6.840
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	553.72	1.74	6.840
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	553.72	1.74	6.840

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2713.81	0.9995	0.0230	0.94029	0.02252

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.233	0.9816	1.0000	0.9800	613.40	1.000	1558.4	3129.1
Byp_Nozz	2.397	0.9814	1.0000	0.9800	2006.86	1.000	1032.2	11475.4

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**********************************************************************************************************************************
Date:05/13/13    Time:07:25:54    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 19/ 33/ 1/17    Run by: Philip C Jorgenson      PC:    76
Temperature Stator 1 inlet: 472.72    Stator 1 exit: 490.05    Stator 2 inlet: 510.93    Stator 2 exit: 519.45
            Stator 3 inlet: 544.81    Stator 3 exit: 553.41    Stator 4 inlet: 577.36    Stator 4 exit: 585.27
            Stator 5 inlet: 604.30    Stator 5 exit: 611.78            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.03
Fan Bypass Relative Humidity       0.26
LPC Inlet Relative Humidity        2.10
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        436.14
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.79
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   462.07
Additional Water at LPC Exit   0.0012042
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	363.04	5392.0	0.6042	3257.78	5.5193	789.49	27.840	1.415	76.800	2679.5	2518.9	1748.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	363.04	4.267	477.92	-16.44	0.0000	1200.29	2.854	425.97	3661.8	0.7800	1.40068	0.0000851	363.01	0.031	0.0001
FS1	Inlet.Fl_O	363.04	4.267	477.92	-16.44	0.0000	1200.29	3.353	446.07	4168.2	0.5969	1.40068	0.0000851	363.01	0.031	0.0001
FS12	Splitter.Fl_02	307.35	4.265	477.92	-16.44	0.0000	1016.68	3.352	446.10	3531.8	0.5966	1.40068	0.0000851	307.32	0.026	0.0001
FS2	Splitter.Fl_01	55.69	4.265	477.92	-16.44	0.0000	184.21	3.790	462.07	830.5	0.4138	1.40068	0.0000851	55.68	0.005	0.0001
FS14	Fan.Fl_O	307.35	6.766	551.94	1.31	0.0000	688.66	5.617	523.35	2606.7	0.5226	1.39972	0.0000851	307.32	0.026	0.0001
FS23	LPC.Fl_O	55.69	10.292	636.56	21.66	0.0000	88.09	9.244	617.38	412.6	0.3950	1.39788	0.0000851	55.68	0.005	0.0001
FS24	VaporIN.Fl_O	55.75	10.292	638.02	15.10	0.0000	88.29	9.237	618.67	412.6	0.3964	1.39767	0.0012893	55.68	0.072	0.0013
FS25	Bleed2.Fl_O	55.75	10.292	638.02	15.10	0.0000	88.29	9.237	618.67	412.6	0.3964	1.39767	0.0012893	55.68	0.072	0.0013
FS3	HPC.Fl_O	53.05	118.786	1354.04	193.69	0.0000	10.60	106.630	1315.93	49.7	0.4012	1.35842	0.0012893	52.98	0.068	0.0013
FS36	Bleed3.Fl_O	41.11	118.786	1354.04	193.69	0.0000	8.22	111.741	1332.36	49.3	0.3011	1.35842	0.0012893	41.06	0.053	0.0013
FS4	Burner.Fl_O	42.02	116.051	2679.48	166.52	0.0220	12.09	109.624	2645.03	74.6	0.2996	1.28980	0.0012893	41.06	0.053	0.0278
FS45	HPT.Fl_O	56.01	27.043	1756.83	-3.44	0.0164	56.01	24.342	1711.84	265.4	0.4009	1.32587	0.0012893	55.03	0.071	0.0212
FS49	LPT.Fl_O	56.66	6.219	1255.46	-135.96	0.0163	208.30	5.362	1207.66	860.2	0.4721	1.35326	0.0012893	55.68	0.072	0.0210
FS5	TEGV.Fl_O	56.66	6.219	1255.52	-135.96	0.0163	208.30	5.362	1207.72	860.2	0.4721	1.35325	0.0012893	55.68	0.072	0.0210
FS8	Core_Nozz.Fl_O	56.66	6.219	1255.66	-135.96	0.0163	208.31	3.321	1063.67	613.4	1.0000	1.35324	0.0012893	55.68	0.072	0.0210
FS17	FanDuctLkg.Fl_O	307.35	6.766	551.94	1.31	0.0000	688.66	5.617	523.35	2606.7	0.5226	1.39972	0.0000851	307.32	0.026	0.0001
FS171	Bleed15.Fl_O	307.35	6.766	551.94	1.31	0.0000	688.66	5.458	519.08	2481.9	0.5626	1.39972	0.0000851	307.32	0.026	0.0001
FS172	FanDuct.Fl_O	307.35	6.766	551.94	1.31	0.0000	688.66	5.458	519.08	2481.9	0.5626	1.39972	0.0000851	307.32	0.026	0.0001
FS173	Byp_Nozz.Fl_O	307.35	6.766	551.94	1.31	0.0000	688.66	3.573	459.86	2006.9	1.0000	1.39972	0.0000851	307.32	0.026	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1016.68	1.587	0.9106	3901.451	1.1549	0.9162	-7720.9	58.40	27.97
LPC	184.21	2.413	0.8616	3901.451	1.3319	0.8775	-3002.1	3.50	2.79
HPC	88.29	11.541	0.8614	10101.747	2.1223	0.8985	-13746.1	32.05	30.86
HPT	12.09	4.291	0.9097	216.442	1.3518	0.8898	13746.1		
LPT	56.01	4.348	0.9136	89.350	1.3964	0.8968	10723.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1181.29	1.573	0.9124	3864.251	0.0600	0.8607	1.0235	0.9980	0.9905
LPC	146.92	2.491	0.8219	1.030	0.0000	1.2537	0.9480	1.0483	0.0003
HPC	80.30	11.045	0.8703	9832.441	12.9566	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.200	0.9097	1.301	4.2001	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.518	0.9203	1.005	3.5184	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3661.85	8908.2

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4721	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5193	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11203.8	6443.9	13746.1
LP_Shaft	3745.1	15038.0	10723.0

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.0517	1003.16	104.39	27.043
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6523	1003.16	104.39	6.219
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	967.22	95.46	34.161
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1187.54	150.83	77.559
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	967.22	95.46	34.161
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1354.04	193.69	118.786
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	967.22	95.46	34.161

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	638.02	15.10	10.292
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.3659	1354.04	193.69	116.051
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.5703	1354.04	193.69	65.139
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1354.04	193.69	118.786
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1354.04	193.69	118.786
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1354.04	193.69	118.786
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	551.94	1.31	6.766
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	551.94	1.31	6.766
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	551.94	1.31	6.766
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	551.94	1.31	6.766

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2679.46	0.9995	0.0230	0.90494	0.02204

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.179	0.9815	1.0000	0.9800	613.40	1.000	1547.9	3012.1
Byp_Nozz	2.371	0.9815	1.0000	0.9800	2006.86	1.000	1030.5	11288.0

25µm, ISA +18R

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**********************************************************************************************************************************
Date:05/13/13    Time:09:33:46    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 22/ 36/ 1/20    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 444.04    Stator 1 exit: 462.66    Stator 2 inlet: 484.20    Stator 2 exit: 491.28
            Stator 3 inlet: 520.22    Stator 3 exit: 528.14    Stator 4 inlet: 555.22    Stator 4 exit: 562.91
            Stator 5 inlet: 583.82    Stator 5 exit: 591.34            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.21
Fan Bypass Relative Humidity       0.15
LPC Inlet Relative Humidity        2.30
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          772.64    Fan/LPC Inlet Flow Velocity        485.39
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.66
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   438.10
Additional Water at LPC Exit   0.0000959
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	396.35	6795.2	0.5973	4059.07	5.2814	772.64	32.335	1.706	100.000	2814.3	2641.1	1834.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	396.35	4.267	457.74	-20.96	0.0000	1282.43	2.854	407.97	3912.3	0.7800	1.40084	0.0000295	396.34	0.012	0.0000
FS1	Inlet.Fl_O	396.35	4.267	457.74	-20.96	0.0000	1282.43	3.150	419.66	4168.2	0.6728	1.40084	0.0000295	396.34	0.012	0.0000
FS12	Splitter.Fl_02	333.25	4.265	457.74	-20.96	0.0000	1078.81	3.174	420.64	3531.8	0.6633	1.40084	0.0000295	333.24	0.010	0.0000
FS2	Splitter.Fl_01	63.10	4.265	457.74	-20.96	0.0000	204.27	3.659	438.10	830.5	0.4729	1.40084	0.0000295	63.10	0.002	0.0000
FS14	Fan.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	6.024	512.21	2606.7	0.5226	1.39992	0.0000295	333.24	0.010	0.0000
FS23	LPC.Fl_O	63.10	10.461	620.31	18.07	0.0000	96.94	9.130	596.71	412.6	0.4454	1.39831	0.0000295	63.10	0.002	0.0000
FS24	VaporIN.Fl_O	63.11	10.461	620.48	17.56	0.0000	96.96	9.129	596.86	412.6	0.4456	1.39830	0.0001254	63.10	0.008	0.0001
FS25	Bleed2.Fl_O	63.11	10.461	620.48	17.56	0.0000	96.96	9.129	596.86	412.6	0.4456	1.39830	0.0001254	63.10	0.008	0.0001
FS3	HPC.Fl_O	60.04	137.969	1373.28	205.18	0.0000	10.41	124.454	1336.42	49.7	0.3921	1.35748	0.0001254	60.04	0.008	0.0001
FS36	Bleed3.Fl_O	46.53	137.969	1373.28	205.18	0.0000	8.07	130.117	1352.21	49.3	0.2949	1.35748	0.0001254	46.53	0.006	0.0001
FS4	Burner.Fl_O	47.66	134.792	2814.27	174.94	0.0242	12.10	127.336	2778.54	74.6	0.3003	1.28478	0.0001254	46.53	0.006	0.0293
FS45	HPT.Fl_O	63.49	31.497	1843.73	-2.90	0.0181	55.86	28.373	1797.37	265.4	0.4001	1.32114	0.0001254	62.36	0.008	0.0220
FS49	LPT.Fl_O	64.23	7.237	1320.50	-142.50	0.0179	208.11	6.243	1270.87	860.2	0.4723	1.34829	0.0001254	63.10	0.008	0.0218
FS5	TEGV.Fl_O	64.23	7.237	1320.57	-142.50	0.0179	208.11	6.243	1270.93	860.2	0.4723	1.34829	0.0001254	63.10	0.008	0.0218
FS8	Core_Nozz.Fl_O	64.23	7.237	1320.70	-142.50	0.0179	208.12	3.870	1121.06	613.4	1.0000	1.34828	0.0001254	63.10	0.008	0.0218
FS17	FanDuctLkg.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	6.024	512.21	2606.7	0.5226	1.39992	0.0000295	333.24	0.010	0.0000
FS171	Bleed15.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	5.854	508.03	2481.9	0.5625	1.39992	0.0000295	333.24	0.010	0.0000
FS172	FanDuct.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	5.854	508.03	2481.9	0.5625	1.39992	0.0000295	333.24	0.010	0.0000
FS173	Byp_Nozz.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	3.833	450.06	2006.9	1.0000	1.39992	0.0000295	333.24	0.010	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1078.81	1.702	0.9114	4139.469	1.1801	0.9178	-9322.3	36.69	23.09
LPC	204.27	2.453	0.8226	4139.469	1.3552	0.8433	-3483.9	2.97	2.24
HPC	96.96	13.189	0.8584	10372.775	2.2133	0.8979	-16345.8	25.82	25.04
HPT	12.10	4.280	0.9118	213.860	1.3470	0.8911	16345.8		
LPT	55.86	4.352	0.9155	90.565	1.3927	0.8988	12806.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1253.47	1.686	0.9132	4100.000	0.0639	0.8607	1.0235	0.9980	0.9905
LPC	166.84	2.748	0.8341	1.093	0.0000	1.2243	0.8312	0.9862	0.0003
HPC	88.19	12.615	0.8672	10096.243	13.5168	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.189	0.9118	1.285	4.1886	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.521	0.9223	1.019	3.5211	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3912.28	9518.0

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4723	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2814	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11345.2	7567.1	16345.8
LP_Shaft	3888.7	17295.7	12806.0

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.3223	1004.71	111.37	31.497
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.7383	1004.71	111.37	7.237
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	966.92	101.99	38.513
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1198.47	160.15	89.516
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	966.92	101.99	38.513
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	1373.28	205.18	137.969
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	966.92	101.99	38.513

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	620.48	17.56	10.461
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	7.2053	1373.28	205.18	134.792
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	6.3048	1373.28	205.18	75.707
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1373.28	205.18	137.969
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1373.28	205.18	137.969
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1373.28	205.18	137.969
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2814.27	0.9995	0.0230	1.12752	0.02423

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.536	0.9809	1.0000	0.9800	613.40	1.000	1585.9	3789.3
Byp_Nozz	2.543	0.9810	1.0000	0.9800	2006.86	1.000	1019.5	12523.9

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*******************************************************************************************************************************
Date:05/13/13    Time:09:34:22    Model:                              Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 19/ 33/ 1/17    Run by: Philip C Jorgenson      PC:    84
Temperature Stator 1 inlet: 450.19    Stator 1 exit: 467.34    Stator 2 inlet: 487.68    Stator 2 exit: 495.58
            Stator 3 inlet: 521.05    Stator 3 exit: 529.20    Stator 4 inlet: 553.27    Stator 4 exit: 560.86
            Stator 5 inlet: 579.84    Stator 5 exit: 587.09             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity        10.00
Fan Face Relative Humidity        4.12
Fan Bypass Relative Humidity      0.18
LPC Inlet Relative Humidity       2.00
LPC Exit Relative Humidity        0.02
HPC Relative Humidity             0.00
Drop Diameter                0.0000250    Inlet Length                         40.00
Ambient Flow Velocity           772.64    Fan/LPC Inlet Flow Velocity         445.56
Ambient Static Pressure           2.85    Fan/LPC Inlet Static Pressure         3.75
Ambient Static Temperature      407.97    Fan/LPC Inlet Static Temperature    441.19
Additional Water at LPC Exit     0.0001101
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	378.74	5799.6	0.5904	3424.35	5.4253	772.64	29.236	1.498	84.000	2646.6	2486.1	1722.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	378.74	4.267	457.74	-20.96	0.0000	1225.45	2.854	407.97	3738.4	0.7800	1.40084	0.0000295	378.73	0.011	0.0000
FS1	Inlet.Fl_O	378.74	4.267	457.74	-20.96	0.0000	1225.45	3.296	425.15	4168.2	0.6183	1.40084	0.0000295	378.73	0.011	0.0000
FS12	Splitter.Fl_02	319.79	4.265	457.74	-20.96	0.0000	1035.24	3.303	425.46	3531.8	0.6151	1.40084	0.0000295	319.78	0.009	0.0000
FS2	Splitter.Fl_01	58.94	4.265	457.74	-20.96	0.0000	190.82	3.750	441.19	830.5	0.4326	1.40084	0.0000295	58.94	0.002	0.0000
FS14	Fan.Fl_O	319.79	6.912	532.08	-3.13	0.0000	688.70	5.737	504.50	2606.7	0.5226	1.40004	0.0000295	319.78	0.009	0.0000
FS23	LPC.Fl_O	58.94	10.333	612.28	16.14	0.0000	91.08	9.197	592.28	412.6	0.4115	1.39852	0.0000295	58.94	0.002	0.0000
FS24	VaporIN.Fl_O	58.95	10.333	612.46	15.55	0.0000	91.11	9.196	592.44	412.6	0.4117	1.39850	0.0001396	58.94	0.008	0.0001
FS25	Bleed2.Fl_O	58.95	10.333	612.46	15.55	0.0000	91.11	9.196	592.44	412.6	0.4117	1.39850	0.0001396	58.94	0.008	0.0001
FS3	HPC.Fl_O	56.09	124.744	1321.16	191.58	0.0000	10.55	112.151	1284.35	49.7	0.3980	1.36057	0.0001396	56.08	0.008	0.0001
FS36	Bleed3.Fl_O	43.47	124.744	1321.16	191.58	0.0000	8.17	117.438	1300.18	49.3	0.2989	1.36057	0.0001396	43.47	0.006	0.0001
FS4	Burner.Fl_O	44.42	121.871	2646.63	164.64	0.0219	12.10	115.114	2612.48	74.6	0.2995	1.29107	0.0001396	43.47	0.006	0.0265
FS45	HPT.Fl_O	59.21	28.387	1730.31	-2.86	0.0163	55.99	25.554	1685.89	265.4	0.4003	1.32733	0.0001396	58.25	0.008	0.0199
FS49	LPT.Fl_O	59.90	6.516	1234.74	-133.29	0.0161	208.46	5.617	1187.55	860.2	0.4721	1.35478	0.0001396	58.94	0.008	0.0197
FS5	TEGV.Fl_O	59.90	6.516	1234.81	-133.29	0.0161	208.46	5.617	1187.61	860.2	0.4721	1.35478	0.0001396	58.94	0.008	0.0197
FS8	Core_Nozz.Fl_O	59.90	6.516	1234.94	-133.29	0.0161	208.47	3.477	1045.47	613.4	1.0000	1.35477	0.0001396	58.94	0.008	0.0197
FS17	FanDuctLkg.Fl_O	319.79	6.912	532.08	-3.13	0.0000	688.70	5.737	504.50	2606.7	0.5226	1.40004	0.0000295	319.78	0.009	0.0000
FS171	Bleed15.Fl_O	319.79	6.912	532.08	-3.13	0.0000	688.70	5.575	500.39	2481.9	0.5625	1.40004	0.0000295	319.78	0.009	0.0000
FS172	FanDuct.Fl_O	319.79	6.912	532.08	-3.13	0.0000	688.70	5.575	500.39	2481.9	0.5625	1.40004	0.0000295	319.78	0.009	0.0000
FS173	Byp_Nozz.Fl_O	319.79	6.912	532.08	-3.13	0.0000	688.70	3.650	443.28	2006.9	1.0000	1.40004	0.0000295	319.78	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1035.24	1.621	0.9117	3968.903	1.1624	0.9175	-8064.3	53.03	26.46
LPC	190.82	2.423	0.8521	3968.903	1.3376	0.8692	-3093.4	2.96	2.15
HPC	91.11	12.072	0.8607	10179.543	2.1571	0.8986	-14326.3	29.85	28.83
HPT	12.10	4.293	0.9099	215.019	1.3534	0.8903	14326.3		
LPT	55.99	4.357	0.9131	89.634	1.3983	0.8961	11157.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1202.85	1.606	0.9135	3931.060	0.0611	0.8607	1.0235	0.9980	0.9905
LPC	151.28	2.560	0.8233	1.048	0.0000	1.2613	0.9120	1.0350	0.0003
HPC	82.86	11.550	0.8696	9908.163	13.1455	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.202	0.9099	1.292	4.2020	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.525	0.9199	1.008	3.5246	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3738.44	9095.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4721	860.21
FanDuct	0.0000	0.5625	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4253	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11061.7	6802.1	14326.3
LP_Shaft	3728.5	15717.2	11157.7

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.1694	973.60	103.56	28.387
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6897	973.60	103.56	6.516
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	938.03	94.76	35.504
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1156.20	149.33	81.268
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	938.03	94.76	35.504
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1321.16	191.58	124.744
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	938.03	94.76	35.504

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	612.46	15.55	10.333
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.7311	1321.16	191.58	121.871
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.8898	1321.16	191.58	68.398
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1321.16	191.58	124.744
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1321.16	191.58	124.744
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1321.16	191.58	124.744
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	532.08	-3.13	6.912
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	532.08	-3.13	6.912
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	532.08	-3.13	6.912
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	532.08	-3.13	6.912

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2646.61	0.9995	0.0230	0.95121	0.02188

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.283	0.9816	1.0000	0.9800	613.40	1.000	1534.9	3240.2
Byp_Nozz	2.422	0.9814	1.0000	0.9800	2006.86	1.000	1011.8	11654.5

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Date:05/13/13 Time:09:34:58 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 19/ 33/ 1/17 Run by: Philip C Jorgenson PC: 79
Temperature Stator 1 inlet: 451.81 Stator 1 exit: 468.55 Stator 2 inlet: 488.59 Stator 2 exit: 496.62
Stator 3 inlet: 521.26 Stator 3 exit: 529.43 Stator 4 inlet: 552.74 Stator 4 exit: 560.29
Stator 5 inlet: 578.76 Stator 5 exit: 585.94 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.88		
Fan Bypass Relative Humidity	0.20		
LPC Inlet Relative Humidity	1.93		
LPC Exit Relative Humidity	0.02		
HPC Relative Humidity	0.00		
Drop Diameter	0.0000250	Inlet Length	40.00
Ambient Flow Velocity	772.64	Fan/LPC Inlet Flow Velocity	433.38
Ambient Static Pressure	2.85	Fan/LPC Inlet Static Pressure	3.78
Ambient Static Temperature	407.97	Fan/LPC Inlet Static Temperature	442.09
Additional Water at LPC Exit	0.0001148		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	373.42	5508.1	0.5896	3247.58	5.4804	772.64	28.311	1.439	79.800	2598.9	2441.9	1690.5

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	373.42	4.267	457.74	-20.96	0.0000	1208.25	2.854	407.97	3686.0	0.7800	1.40084	0.0000295	373.41	0.011	0.0000
FS1	Inlet.Fl_O	373.42	4.267	457.74	-20.96	0.0000	1208.25	3.335	426.59	4168.2	0.6035	1.40084	0.0000295	373.41	0.011	0.0000
FS12	Splitter.Fl_02	315.80	4.265	457.74	-20.96	0.0000	1022.31	3.338	426.73	3531.8	0.6021	1.40084	0.0000295	315.79	0.009	0.0000
FS2	Splitter.Fl_01	57.62	4.265	457.74	-20.96	0.0000	186.54	3.776	442.09	830.5	0.4203	1.40084	0.0000295	57.62	0.002	0.0000
FS14	Fan.Fl_O	315.80	6.810	529.66	-3.71	0.0000	688.70	5.653	502.21	2606.7	0.5226	1.40008	0.0000295	315.79	0.009	0.0000
FS23	LPC.Fl_O	57.62	10.280	610.14	15.62	0.0000	89.34	9.199	591.11	412.6	0.4018	1.39857	0.0000295	57.62	0.002	0.0000
FS24	VaporIN.Fl_O	57.63	10.280	610.33	15.01	0.0000	89.37	9.198	591.27	412.6	0.4020	1.39854	0.0001442	57.62	0.008	0.0001
FS25	Bleed2.Fl_O	57.63	10.280	610.33	15.01	0.0000	89.37	9.198	591.27	412.6	0.4020	1.39854	0.0001442	57.62	0.008	0.0001
FS3	HPC.Fl_O	54.83	120.797	1306.23	187.69	0.0000	10.59	108.497	1269.44	49.7	0.3997	1.36147	0.0001442	54.83	0.008	0.0001
FS36	Bleed3.Fl_O	42.50	120.797	1306.23	187.69	0.0000	8.20	113.666	1285.28	49.3	0.3001	1.36147	0.0001442	42.49	0.006	0.0001
FS4	Burner.Fl_O	43.40	118.015	2598.87	161.65	0.0212	12.10	111.472	2565.18	74.6	0.2992	1.29288	0.0001442	42.49	0.006	0.0258
FS45	HPT.Fl_O	57.86	27.464	1698.37	-2.84	0.0158	56.02	24.721	1654.56	265.4	0.4003	1.32915	0.0001442	56.95	0.008	0.0194
FS49	LPT.Fl_O	58.53	6.302	1210.77	-130.68	0.0157	208.54	5.433	1164.29	860.2	0.4720	1.35661	0.0001442	57.62	0.008	0.0192
FS5	TEGV.Fl_O	58.53	6.302	1210.83	-130.68	0.0157	208.54	5.433	1164.35	860.2	0.4720	1.35660	0.0001442	57.62	0.008	0.0192
FS8	Core_Nozz.Fl_O	58.53	6.302	1210.97	-130.68	0.0157	208.55	3.362	1024.42	613.4	1.0000	1.35659	0.0001442	57.62	0.008	0.0192
FS17	FanDuctLkg.Fl_O	315.80	6.810	529.66	-3.71	0.0000	688.70	5.653	502.21	2606.7	0.5226	1.40008	0.0000295	315.79	0.009	0.0000
FS171	Bleed15.Fl_O	315.80	6.810	529.66	-3.71	0.0000	688.70	5.493	498.11	2481.9	0.5625	1.40008	0.0000295	315.79	0.009	0.0000
FS172	FanDuct.Fl_O	315.80	6.810	529.66	-3.71	0.0000	688.70	5.493	498.11	2481.9	0.5625	1.40008	0.0000295	315.79	0.009	0.0000
FS173	Byp_Nozz.Fl_O	315.80	6.810	529.66	-3.71	0.0000	688.70	3.596	441.26	2006.9	1.0000	1.40008	0.0000295	315.79	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1022.31	1.597	0.9114	3920.858	1.1571	0.9170	-7704.5	57.15	27.51
LPC	186.54	2.411	0.8584	3920.858	1.3329	0.8747	-2982.0	3.34	2.63
HPC	89.37	11.750	0.8613	10131.152	2.1402	0.8988	-13739.2	31.12	29.99
HPT	12.10	4.297	0.9091	215.577	1.3551	0.8897	13739.2		
LPT	56.02	4.358	0.9123	89.378	1.3998	0.8952	10686.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1187.83	1.583	0.9132	3883.473	0.0603	0.8607	1.0235	0.9980	0.9905
LPC	148.17	2.511	0.8223	1.036	0.0000	1.2589	0.9336	1.0439	0.0003
HPC	81.28	11.244	0.8702	9861.062	13.0364	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.206	0.9090	1.296	4.2057	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.526	0.9191	1.005	3.5256	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3685.97	8967.5

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4804	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10989.9	6566.0	13739.2
LP_Shaft	3683.4	15237.7	10686.4

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.1208	964.77	101.35	27.464
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6743	964.77	101.35	6.302
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	929.84	92.72	34.594
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1144.14	146.25	78.801
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	929.84	92.72	34.594
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1306.23	187.69	120.797
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	929.84	92.72	34.594

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	610.33	15.01	10.280
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.5802	1306.23	187.69	118.015
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.7578	1306.23	187.69	66.220
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1306.23	187.69	120.797
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1306.23	187.69	120.797
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1306.23	187.69	120.797
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	529.66	-3.71	6.810
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	529.66	-3.71	6.810
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	529.66	-3.71	6.810
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	529.66	-3.71	6.810

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2598.85	0.9995	0.0230	0.90211	0.02123

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.208	0.9816	1.0000	0.9800	613.40	1.000	1520.3	3077.2
Byp_Nozz	2.386	0.9815	1.0000	0.9800	2006.86	1.000	1009.5	11398.4

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Date:05/13/13 Time:09:35:32 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 18/ 32/ 1/16 Run by: Philip C Jorgenson PC: 76
Temperature Stator 1 inlet: 452.90 Stator 1 exit: 469.37 Stator 2 inlet: 489.22 Stator 2 exit: 497.33
Stator 3 inlet: 521.44 Stator 3 exit: 529.62 Stator 4 inlet: 552.42 Stator 4 exit: 559.96
Stator 5 inlet: 578.10 Stator 5 exit: 585.24 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.72		
Fan Bypass Relative Humidity	0.21		
LPC Inlet Relative Humidity	1.88		
LPC Exit Relative Humidity	0.02		
HPC Relative Humidity	0.00		
Drop Diameter	0.0000250	Inlet Length	40.00
Ambient Flow Velocity	772.64	Fan/LPC Inlet Flow Velocity	424.73
Ambient Static Pressure	2.85	Fan/LPC Inlet Static Pressure	3.79
Ambient Static Temperature	407.97	Fan/LPC Inlet Static Temperature	442.70
Additional Water at LPC Exit	0.0001183		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	369.50	5301.1	0.5900	3127.72	5.5201	772.64	27.662	1.398	76.800	2566.5	2412.0	1669.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	369.50	4.267	457.74	-20.96	0.0000	1195.58	2.854	407.97	3647.3	0.7800	1.40084	0.0000295	369.49	0.011	0.0000
FS1	Inlet.Fl_O	369.50	4.267	457.74	-20.96	0.0000	1195.58	3.363	427.60	4168.2	0.5930	1.40084	0.0000295	369.49	0.011	0.0000
FS12	Splitter.Fl_02	312.83	4.265	457.74	-20.96	0.0000	1012.72	3.362	427.62	3531.8	0.5927	1.40084	0.0000295	312.82	0.009	0.0000
FS2	Splitter.Fl_01	56.67	4.265	457.74	-20.96	0.0000	183.46	3.795	442.70	830.5	0.4116	1.40084	0.0000295	56.67	0.002	0.0000
FS14	Fan.Fl_O	312.83	6.735	528.02	-4.11	0.0000	688.70	5.591	500.65	2606.7	0.5226	1.40010	0.0000295	312.82	0.009	0.0000
FS23	LPC.Fl_O	56.67	10.241	608.73	15.28	0.0000	88.10	9.198	590.37	412.6	0.3950	1.39860	0.0000295	56.67	0.002	0.0000
FS24	VaporIN.Fl_O	56.68	10.241	608.93	14.65	0.0000	88.12	9.197	590.54	412.6	0.3951	1.39858	0.0001478	56.67	0.008	0.0001
FS25	Bleed2.Fl_O	56.68	10.241	608.93	14.65	0.0000	88.12	9.197	590.54	412.6	0.3951	1.39858	0.0001478	56.67	0.008	0.0001
FS3	HPC.Fl_O	53.93	118.028	1296.17	185.07	0.0000	10.62	105.936	1259.37	49.7	0.4009	1.36209	0.0001478	53.92	0.008	0.0001
FS36	Bleed3.Fl_O	41.79	118.028	1296.17	185.07	0.0000	8.23	111.020	1275.22	49.3	0.3009	1.36209	0.0001478	41.79	0.006	0.0001
FS4	Burner.Fl_O	42.66	115.310	2566.49	159.63	0.0208	12.10	108.915	2533.12	74.6	0.2990	1.29413	0.0001478	41.79	0.006	0.0252
FS45	HPT.Fl_O	56.88	26.819	1676.79	-2.82	0.0155	56.05	24.137	1633.37	265.4	0.4003	1.33040	0.0001478	56.01	0.008	0.0190
FS49	LPT.Fl_O	57.55	6.153	1194.61	-128.91	0.0153	208.59	5.304	1148.61	860.2	0.4719	1.35785	0.0001478	56.67	0.008	0.0188
FS5	TEGV.Fl_O	57.55	6.153	1194.67	-128.91	0.0153	208.60	5.304	1148.67	860.2	0.4719	1.35784	0.0001478	56.67	0.008	0.0188
FS8	Core_Nozz.Fl_O	57.55	6.153	1194.81	-128.91	0.0153	208.61	3.281	1010.25	613.4	1.0000	1.35783	0.0001478	56.67	0.008	0.0188
FS17	FanDuctLkg.Fl_O	312.83	6.735	528.02	-4.11	0.0000	688.70	5.591	500.65	2606.7	0.5226	1.40010	0.0000295	312.82	0.009	0.0000
FS171	Bleed15.Fl_O	312.83	6.735	528.02	-4.11	0.0000	688.70	5.433	496.56	2481.9	0.5625	1.40010	0.0000295	312.82	0.009	0.0000
FS172	FanDuct.Fl_O	312.83	6.735	528.02	-4.11	0.0000	688.70	5.433	496.56	2481.9	0.5625	1.40010	0.0000295	312.82	0.009	0.0000
FS173	Byp_Nozz.Fl_O	312.83	6.735	528.02	-4.11	0.0000	688.70	3.557	439.89	2006.9	1.0000	1.40010	0.0000295	312.82	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1012.72	1.579	0.9094	3888.172	1.1535	0.9150	-7457.2	59.28	28.29
LPC	183.46	2.401	0.8622	3888.172	1.3299	0.8780	-2905.6	3.61	2.87
HPC	88.12	11.525	0.8614	10097.708	2.1286	0.8986	-13335.0	32.02	30.82
HPT	12.10	4.300	0.9085	215.968	1.3562	0.8892	13335.1		
LPT	56.05	4.359	0.9118	89.201	1.4008	0.8945	10362.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1176.68	1.566	0.9112	3851.098	0.0597	0.8607	1.0235	0.9980	0.9905
LPC	146.06	2.477	0.8217	1.027	0.0000	1.2561	0.9487	1.0493	0.0003
HPC	80.15	11.029	0.8703	9828.510	12.9606	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.208	0.9085	1.298	4.2081	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.526	0.9186	1.003	3.5261	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3647.32	8873.4

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4719	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5201	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10941.1	6401.3	13335.1
LP_Shaft	3652.7	14900.5	10362.8

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.0857	958.84	99.86	26.819
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6631	958.84	99.86	6.153
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	924.34	91.34	33.954
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1136.00	144.17	77.069
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	924.34	91.34	33.954
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1296.17	185.07	118.028
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	924.34	91.34	33.954

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	608.93	14.65	10.241
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.4715	1296.17	185.07	115.310
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.6627	1296.17	185.07	64.693
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1296.17	185.07	118.028
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1296.17	185.07	118.028
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1296.17	185.07	118.028
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	528.02	-4.11	6.735
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	528.02	-4.11	6.735
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	528.02	-4.11	6.735
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	528.02	-4.11	6.735

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2566.47	0.9995	0.0230	0.86881	0.02079

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.156	0.9815	1.0000	0.9800	613.40	1.000	1510.4	2963.3
Byp_Nozz	2.360	0.9815	1.0000	0.9800	2006.86	1.000	1007.9	11211.2

25μm, ISA +36R

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**********************************************************************************************************************************
Date:05/13/13    Time:10:02:43    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 25/ 53/ 2/22    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 463.74    Stator 1 exit: 483.21    Stator 2 inlet: 505.74    Stator 2 exit: 513.20
            Stator 3 inlet: 543.41    Stator 3 exit: 551.73    Stator 4 inlet: 579.99    Stator 4 exit: 588.05
            Stator 5 inlet: 609.88    Stator 5 exit: 617.77            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.44
Fan Bypass Relative Humidity       0.19
LPC Inlet Relative Humidity        2.52
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        495.61
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.66
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   457.45
Additional Water at LPC Exit   0.0001483
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	387.84	6803.9	0.6131	4171.48	5.2846	789.49	32.270	1.709	100.000	2922.3	2743.4	1912.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	387.84	4.267	477.92	-16.44	0.0000	1282.29	2.854	425.97	3912.0	0.7800	1.40068	0.0000851	387.81	0.033	0.0001
FS1	Inlet.Fl_O	387.84	4.267	477.92	-16.44	0.0000	1282.29	3.150	438.18	4168.2	0.6727	1.40068	0.0000851	387.81	0.033	0.0001
FS12	Splitter.Fl_02	326.13	4.265	477.92	-16.44	0.0000	1078.79	3.174	439.19	3531.8	0.6634	1.40068	0.0000851	326.10	0.028	0.0001
FS2	Splitter.Fl_01	61.71	4.265	477.92	-16.44	0.0000	204.14	3.660	457.45	830.5	0.4725	1.40068	0.0000851	61.71	0.005	0.0001
FS14	Fan.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	6.025	534.77	2606.7	0.5227	1.39952	0.0000851	326.10	0.028	0.0001
FS23	LPC.Fl_O	61.71	10.484	647.79	24.37	0.0000	96.67	9.159	623.34	412.6	0.4440	1.39757	0.0000851	61.71	0.005	0.0001
FS24	VaporIN.Fl_O	61.72	10.484	648.03	23.57	0.0000	96.70	9.158	623.54	412.6	0.4442	1.39754	0.0002334	61.71	0.014	0.0002
FS25	Bleed2.Fl_O	61.72	10.484	648.03	23.57	0.0000	96.70	9.158	623.54	412.6	0.4442	1.39754	0.0002334	61.71	0.014	0.0002
FS3	HPC.Fl_O	58.73	137.687	1427.73	218.81	0.0000	10.40	124.213	1389.70	49.7	0.3923	1.35435	0.0002334	58.71	0.014	0.0002
FS36	Bleed3.Fl_O	45.51	137.687	1427.73	218.81	0.0000	8.06	129.858	1406.02	49.3	0.2950	1.35435	0.0002334	45.50	0.011	0.0002
FS4	Burner.Fl_O	46.67	134.516	2922.28	186.59	0.0255	12.10	127.093	2885.54	74.6	0.3007	1.28094	0.0002334	45.50	0.011	0.0308
FS45	HPT.Fl_O	62.16	31.489	1921.32	1.89	0.0190	55.83	28.368	1873.47	265.4	0.4006	1.31730	0.0002334	60.99	0.014	0.0232
FS49	LPT.Fl_O	62.88	7.250	1379.92	-143.86	0.0188	207.91	6.255	1328.59	860.2	0.4726	1.34411	0.0002334	61.71	0.014	0.0230
FS5	TEGV.Fl_O	62.88	7.250	1379.98	-143.86	0.0188	207.91	6.255	1328.65	860.2	0.4726	1.34411	0.0002334	61.71	0.014	0.0230
FS8	Core_Nozz.Fl_O	62.88	7.250	1380.11	-143.86	0.0188	207.92	3.882	1173.53	613.4	1.0000	1.34410	0.0002334	61.71	0.014	0.0230
FS17	FanDuctLkg.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	6.025	534.77	2606.7	0.5227	1.39952	0.0000851	326.10	0.028	0.0001
FS171	Bleed15.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	5.854	530.41	2481.9	0.5626	1.39952	0.0000851	326.10	0.028	0.0001
FS172	FanDuct.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	5.854	530.41	2481.9	0.5626	1.39952	0.0000851	326.10	0.028	0.0001
FS173	Byp_Nozz.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	3.833	469.91	2006.9	1.0000	1.39952	0.0000851	326.10	0.028	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1078.79	1.702	0.9114	4139.469	1.1801	0.9178	-9525.9	36.68	23.09
LPC	204.14	2.458	0.8236	4139.469	1.3554	0.8443	-3563.2	2.97	2.24
HPC	96.70	13.133	0.8585	10361.858	2.2032	0.8978	-16636.2	26.04	25.26
HPT	12.10	4.272	0.9122	214.253	1.3427	0.8903	16636.3		
LPT	55.83	4.343	0.9167	90.652	1.3888	0.9005	13088.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1253.45	1.686	0.9132	4100.000	0.0639	0.8607	1.0235	0.9980	0.9905
LPC	166.84	2.748	0.8341	1.093	0.0000	1.2236	0.8344	0.9874	0.0003
HPC	87.95	12.561	0.8673	10085.617	13.4951	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.181	0.9122	1.288	4.1812	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.515	0.9235	1.020	3.5146	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3912.02	9516.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4726	860.21
FanDuct	0.0000	0.5626	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2846	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11582.1	7544.0	16636.3
LP_Shaft	3973.5	17300.5	13088.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.2714	1046.53	121.19	31.489
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.7221	1046.53	121.19	7.250
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	1007.41	111.43	38.469
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1247.01	171.95	89.350
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	1007.41	111.43	38.469
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1427.73	218.81	137.687
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	1007.41	111.43	38.469

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	648.03	23.57	10.484
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	7.0474	1427.73	218.81	134.516
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	6.1667	1427.73	218.81	75.584
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1427.73	218.81	137.687
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1427.73	218.81	137.687
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1427.73	218.81	137.687
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2922.28	0.9995	0.0230	1.15874	0.02546

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.540	0.9809	1.0000	0.9800	613.40	1.000	1620.2	3797.0
Byp_Nozz	2.543	0.9810	1.0000	0.9800	2006.86	1.000	1041.7	12523.6

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**********************************************************************************************************************************
Date:05/13/13    Time:10:03:19    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 20/ 34/ 1/18    Run by: Philip C Jorgenson      PC:    84
Temperature Stator 1 inlet: 469.62    Stator 1 exit: 487.66    Stator 2 inlet: 509.01    Stator 2 exit: 517.25
            Stator 3 inlet: 544.09    Stator 3 exit: 552.62    Stator 4 inlet: 577.97    Stator 4 exit: 585.92
            Stator 5 inlet: 605.89    Stator 5 exit: 613.49            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.44
Fan Bypass Relative Humidity       0.23
LPC Inlet Relative Humidity        2.25
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        458.48
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.74
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   460.40
Additional Water at LPC Exit   0.0001661
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	372.14	5892.0	0.6058	3569.54	5.4147	789.49	29.444	1.518	84.000	2763.0	2595.9	1804.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	372.14	4.267	477.92	-16.44	0.0000	1230.39	2.854	425.97	3753.7	0.7800	1.40068	0.0000851	372.11	0.032	0.0001
FS1	Inlet.Fl_O	372.14	4.267	477.92	-16.44	0.0000	1230.39	3.285	443.45	4168.2	0.6228	1.40068	0.0000851	372.11	0.032	0.0001
FS12	Splitter.Fl_02	314.13	4.265	477.92	-16.44	0.0000	1039.10	3.292	443.82	3531.8	0.6192	1.40068	0.0000851	314.10	0.027	0.0001
FS2	Splitter.Fl_01	58.01	4.265	477.92	-16.44	0.0000	191.90	3.743	460.40	830.5	0.4357	1.40068	0.0000851	58.01	0.005	0.0001
FS14	Fan.Fl_O	314.13	6.942	556.22	2.34	0.0000	688.65	5.763	527.42	2606.7	0.5226	1.39966	0.0000851	314.10	0.027	0.0001
FS23	LPC.Fl_O	58.01	10.359	639.99	22.49	0.0000	91.42	9.210	618.92	412.6	0.4135	1.39779	0.0000851	58.01	0.005	0.0001
FS24	VaporIN.Fl_O	58.02	10.359	640.24	21.59	0.0000	91.45	9.209	619.14	412.6	0.4138	1.39776	0.0002511	58.01	0.015	0.0003
FS25	Bleed2.Fl_O	58.02	10.359	640.24	21.59	0.0000	91.45	9.209	619.14	412.6	0.4138	1.39776	0.0002511	58.01	0.015	0.0003
FS3	HPC.Fl_O	55.21	125.630	1378.62	205.87	0.0000	10.53	112.990	1340.59	49.7	0.3978	1.35715	0.0002511	55.20	0.014	0.0003
FS36	Bleed3.Fl_O	42.79	125.630	1378.62	205.87	0.0000	8.16	118.298	1356.94	49.3	0.2988	1.35715	0.0002511	42.78	0.011	0.0003
FS4	Burner.Fl_O	43.78	122.737	2762.97	176.94	0.0232	12.10	115.948	2727.69	74.6	0.2999	1.28685	0.0002511	42.78	0.011	0.0282
FS45	HPT.Fl_O	58.34	28.643	1812.51	1.94	0.0173	55.95	25.790	1766.55	265.4	0.4007	1.32298	0.0002511	57.33	0.014	0.0212
FS49	LPT.Fl_O	59.01	6.588	1297.24	-135.02	0.0171	208.21	5.681	1248.22	860.2	0.4722	1.35022	0.0002511	58.01	0.015	0.0210
FS5	TEGV.Fl_O	59.01	6.588	1297.30	-135.02	0.0171	208.21	5.681	1248.28	860.2	0.4723	1.35021	0.0002511	58.01	0.015	0.0210
FS8	Core_Nozz.Fl_O	59.01	6.588	1297.43	-135.02	0.0171	208.22	3.521	1100.42	613.4	1.0000	1.35020	0.0002511	58.01	0.015	0.0210
FS17	FanDuctLkg.Fl_O	314.13	6.942	556.22	2.34	0.0000	688.65	5.763	527.42	2606.7	0.5226	1.39966	0.0000851	314.10	0.027	0.0001
FS171	Bleed15.Fl_O	314.13	6.942	556.22	2.34	0.0000	688.65	5.600	523.12	2481.9	0.5626	1.39966	0.0000851	314.10	0.027	0.0001
FS172	FanDuct.Fl_O	314.13	6.942	556.22	2.34	0.0000	688.65	5.600	523.12	2481.9	0.5626	1.39966	0.0000851	314.10	0.027	0.0001
FS173	Byp_Nozz.Fl_O	314.13	6.942	556.22	2.34	0.0000	688.65	3.666	463.44	2006.9	1.0000	1.39966	0.0000851	314.10	0.027	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1039.10	1.628	0.9121	3982.795	1.1638	0.9179	-8348.2	51.72	26.15
LPC	191.90	2.429	0.8504	3982.795	1.3391	0.8677	-3195.2	2.91	2.10
HPC	91.45	12.127	0.8606	10188.703	2.1533	0.8985	-14761.5	29.71	28.71
HPT	12.10	4.285	0.9109	215.356	1.3490	0.8905	14761.6		
LPT	55.95	4.348	0.9147	89.801	1.3941	0.8982	11543.3		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1207.34	1.613	0.9139	3944.819	0.0614	0.8607	1.0235	0.9980	0.9905
LPC	152.38	2.575	0.8239	1.052	0.0000	1.2593	0.9073	1.0322	0.0003
HPC	83.17	11.603	0.8695	9917.079	13.1570	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.194	0.9109	1.294	4.1941	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.518	0.9215	1.010	3.5181	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3753.69	9131.6

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4722	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4147	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11319.9	6848.9	14761.6
LP_Shaft	3823.1	15857.9	11543.3

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.1353	1017.06	113.73	28.643
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6789	1017.06	113.73	6.588
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	980.01	104.52	35.719
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1207.11	161.65	81.827
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	980.01	104.52	35.719
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1378.62	205.87	125.630
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	980.01	104.52	35.719

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	640.24	21.59	10.359
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.6251	1378.62	205.87	122.737
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.7971	1378.62	205.87	68.915
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1378.62	205.87	125.630
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1378.62	205.87	125.630
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1378.62	205.87	125.630
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	556.22	2.34	6.942
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	556.22	2.34	6.942
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	556.22	2.34	6.942
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	556.22	2.34	6.942

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2762.96	0.9995	0.0230	0.99154	0.02318

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.308	0.9816	1.0000	0.9800	613.40	1.000	1572.3	3292.9
Byp_Nozz	2.432	0.9814	1.0000	0.9800	2006.86	1.000	1034.5	11730.7

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**********************************************************************************************************************************
Date:05/13/13    Time:10:03:55    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 20/ 34/ 1/18    Run by: Philip C Jorgenson      PC:    79
Temperature Stator 1 inlet: 471.34    Stator 1 exit: 488.94    Stator 2 inlet: 509.96    Stator 2 exit: 518.33
            Stator 3 inlet: 544.28    Stator 3 exit: 552.83    Stator 4 inlet: 577.35    Stator 4 exit: 585.26
            Stator 5 inlet: 604.69    Stator 5 exit: 612.21            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.19
Fan Bypass Relative Humidity       0.25
LPC Inlet Relative Humidity        2.16
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        445.95
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.77
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   461.35
Additional Water at LPC Exit   0.0001730
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	366.89	5595.6	0.6046	3383.12	5.4687	789.49	28.508	1.457	79.800	2712.4	2549.2	1770.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	366.89	4.267	477.92	-16.44	0.0000	1213.02	2.854	425.97	3700.7	0.7800	1.40068	0.0000851	366.85	0.031	0.0001
FS1	Inlet.Fl_O	366.89	4.267	477.92	-16.44	0.0000	1213.02	3.325	444.99	4168.2	0.6076	1.40068	0.0000851	366.85	0.031	0.0001
FS12	Splitter.Fl_02	310.17	4.265	477.92	-16.44	0.0000	1026.01	3.328	445.17	3531.8	0.6058	1.40068	0.0000851	310.14	0.026	0.0001
FS2	Splitter.Fl_01	56.72	4.265	477.92	-16.44	0.0000	187.62	3.770	461.35	830.5	0.4234	1.40068	0.0000851	56.71	0.005	0.0001
FS14	Fan.Fl_O	310.17	6.839	553.68	1.73	0.0000	688.65	5.677	525.00	2606.7	0.5226	1.39970	0.0000851	310.14	0.026	0.0001
FS23	LPC.Fl_O	56.72	10.303	637.63	21.92	0.0000	89.70	9.209	617.57	412.6	0.4039	1.39785	0.0000851	56.71	0.005	0.0001
FS24	VaporIN.Fl_O	56.73	10.303	637.89	20.99	0.0000	89.73	9.208	617.81	412.6	0.4041	1.39782	0.0002581	56.71	0.015	0.0003
FS25	Bleed2.Fl_O	56.73	10.303	637.89	20.99	0.0000	89.73	9.208	617.81	412.6	0.4041	1.39782	0.0002581	56.71	0.015	0.0003
FS3	HPC.Fl_O	53.98	121.635	1362.94	201.75	0.0000	10.57	109.284	1324.91	49.7	0.3996	1.35806	0.0002581	53.96	0.014	0.0003
FS36	Bleed3.Fl_O	41.83	121.635	1362.94	201.75	0.0000	8.19	114.474	1341.28	49.3	0.3000	1.35806	0.0002581	41.82	0.011	0.0003
FS4	Burner.Fl_O	42.77	118.833	2712.39	173.82	0.0225	12.10	112.259	2677.61	74.6	0.2996	1.28875	0.0002581	41.82	0.011	0.0273
FS45	HPT.Fl_O	57.00	27.706	1778.43	1.96	0.0168	55.99	24.943	1733.08	265.4	0.4007	1.32483	0.0002581	56.05	0.014	0.0206
FS49	LPT.Fl_O	57.67	6.370	1271.48	-132.25	0.0166	208.30	5.493	1223.20	860.2	0.4722	1.35217	0.0002581	56.71	0.015	0.0204
FS5	TEGV.Fl_O	57.67	6.370	1271.54	-132.25	0.0166	208.31	5.493	1223.27	860.2	0.4722	1.35217	0.0002581	56.71	0.015	0.0204
FS8	Core_Nozz.Fl_O	57.67	6.370	1271.67	-132.25	0.0166	208.32	3.402	1077.71	613.4	1.0000	1.35216	0.0002581	56.71	0.015	0.0204
FS17	FanDuctLkg.Fl_O	310.17	6.839	553.68	1.73	0.0000	688.65	5.677	525.00	2606.7	0.5226	1.39970	0.0000851	310.14	0.026	0.0001
FS171	Bleed15.Fl_O	310.17	6.839	553.68	1.73	0.0000	688.65	5.517	520.72	2481.9	0.5626	1.39970	0.0000851	310.14	0.026	0.0001
FS172	FanDuct.Fl_O	310.17	6.839	553.68	1.73	0.0000	688.65	5.517	520.72	2481.9	0.5626	1.39970	0.0000851	310.14	0.026	0.0001
FS173	Byp_Nozz.Fl_O	310.17	6.839	553.68	1.73	0.0000	688.65	3.612	461.31	2006.9	1.0000	1.39970	0.0000851	310.14	0.026	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1026.01	1.604	0.9117	3933.757	1.1585	0.9174	-7974.7	56.32	27.21
LPC	187.62	2.416	0.8570	3933.757	1.3342	0.8735	-3078.3	3.23	2.50
HPC	89.73	11.805	0.8612	10140.735	2.1366	0.8987	-14156.4	30.99	29.88
HPT	12.10	4.289	0.9102	215.934	1.3508	0.8900	14156.4		
LPT	55.99	4.349	0.9140	89.541	1.3957	0.8973	11053.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1192.12	1.590	0.9136	3896.249	0.0606	0.8607	1.0235	0.9980	0.9905
LPC	149.01	2.524	0.8226	1.039	0.0000	1.2591	0.9291	1.0419	0.0003
HPC	81.61	11.296	0.8702	9870.389	13.0466	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.198	0.9102	1.298	4.1980	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.519	0.9208	1.007	3.5192	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3700.68	9002.6

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4722	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4687	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11246.0	6611.3	14156.4
LP_Shaft	3776.1	15373.6	11053.0

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.0876	1007.74	111.37	27.706
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.6637	1007.74	111.37	6.370
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	971.35	102.33	34.796
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1194.40	158.37	79.329
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	971.35	102.33	34.796
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1362.94	201.75	121.635
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	971.35	102.33	34.796

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	637.89	20.99	10.303
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	6.4771	1362.94	201.75	118.833
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	5.6676	1362.94	201.75	66.708
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1362.94	201.75	121.635
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1362.94	201.75	121.635
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1362.94	201.75	121.635
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	553.68	1.73	6.839
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	553.68	1.73	6.839
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	553.68	1.73	6.839
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	553.68	1.73	6.839

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2712.37	0.9995	0.0230	0.93976	0.02247

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.232	0.9816	1.0000	0.9800	613.40	1.000	1557.1	3127.1
Byp_Nozz	2.396	0.9814	1.0000	0.9800	2006.86	1.000	1032.2	11471.1

```
**********************************************************************************************************************************
Date:05/13/13    Time:10:04:30    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 20/ 34/ 1/18    Run by: Philip C Jorgenson      PC:    76
Temperature Stator 1 inlet: 472.53    Stator 1 exit: 489.84    Stator 2 inlet: 510.66    Stator 2 exit: 519.13
            Stator 3 inlet: 544.50    Stator 3 exit: 553.07    Stator 4 inlet: 577.06    Stator 4 exit: 584.95
            Stator 5 inlet: 604.02    Stator 5 exit: 611.50            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.03
Fan Bypass Relative Humidity       0.26
LPC Inlet Relative Humidity        2.11
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        436.97
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.79
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   462.01
Additional Water at LPC Exit   0.0001782
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	363.05	5385.0	0.6045	3255.09	5.5094	789.49	27.844	1.415	76.800	2677.6	2517.0	1747.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	363.05	4.267	477.92	-16.44	0.0000	1200.33	2.854	425.97	3662.0	0.7800	1.40068	0.0000851	363.02	0.031	0.0001
FS1	Inlet.Fl_O	363.05	4.267	477.92	-16.44	0.0000	1200.33	3.353	446.06	4168.2	0.5970	1.40068	0.0000851	363.02	0.031	0.0001
FS12	Splitter.Fl_02	307.28	4.265	477.92	-16.44	0.0000	1016.44	3.352	446.12	3531.8	0.5964	1.40068	0.0000851	307.25	0.026	0.0001
FS2	Splitter.Fl_01	55.77	4.265	477.92	-16.44	0.0000	184.49	3.789	462.01	830.5	0.4146	1.40068	0.0000851	55.77	0.005	0.0001
FS14	Fan.Fl_O	307.28	6.764	551.90	1.30	0.0000	688.66	5.615	523.31	2606.7	0.5226	1.39973	0.0000851	307.25	0.026	0.0001
FS23	LPC.Fl_O	55.77	10.268	636.19	21.57	0.0000	88.41	9.213	616.85	412.6	0.3968	1.39789	0.0000851	55.77	0.005	0.0001
FS24	VaporIN.Fl_O	55.78	10.268	636.45	20.61	0.0000	88.44	9.212	617.09	412.6	0.3970	1.39786	0.0002632	55.77	0.015	0.0003
FS25	Bleed2.Fl_O	55.78	10.268	636.45	20.61	0.0000	88.44	9.212	617.09	412.6	0.3970	1.39786	0.0002632	55.77	0.015	0.0003
FS3	HPC.Fl_O	53.08	118.804	1352.21	198.94	0.0000	10.60	106.663	1314.18	49.7	0.4009	1.35869	0.0002632	53.06	0.014	0.0003
FS36	Bleed3.Fl_O	41.14	118.804	1352.21	198.94	0.0000	8.22	111.766	1330.57	49.3	0.3009	1.35869	0.0002632	41.12	0.011	0.0003
FS4	Burner.Fl_O	42.04	116.068	2677.57	171.67	0.0220	12.09	109.644	2643.14	74.6	0.2994	1.29006	0.0002632	41.12	0.011	0.0268
FS45	HPT.Fl_O	56.03	27.046	1755.32	2.00	0.0164	56.01	24.346	1710.38	265.4	0.4007	1.32611	0.0002632	55.12	0.015	0.0202
FS49	LPT.Fl_O	56.69	6.217	1254.04	-130.35	0.0162	208.37	5.360	1206.27	860.2	0.4721	1.35350	0.0002632	55.77	0.015	0.0199
FS5	TEGV.Fl_O	56.69	6.217	1254.11	-130.35	0.0162	208.38	5.360	1206.33	860.2	0.4721	1.35350	0.0002632	55.77	0.015	0.0199
FS8	Core_Nozz.Fl_O	56.69	6.217	1254.24	-130.35	0.0162	208.39	3.319	1062.36	613.4	1.0000	1.35349	0.0002632	55.77	0.015	0.0199
FS17	FanDuctLkg.Fl_O	307.28	6.764	551.90	1.30	0.0000	688.66	5.615	523.31	2606.7	0.5226	1.39973	0.0000851	307.25	0.026	0.0001
FS171	Bleed15.Fl_O	307.28	6.764	551.90	1.30	0.0000	688.66	5.456	519.04	2481.9	0.5626	1.39973	0.0000851	307.25	0.026	0.0001
FS172	FanDuct.Fl_O	307.28	6.764	551.90	1.30	0.0000	688.66	5.456	519.04	2481.9	0.5626	1.39973	0.0000851	307.25	0.026	0.0001
FS173	Byp_Nozz.Fl_O	307.28	6.764	551.90	1.30	0.0000	688.66	3.572	459.82	2006.9	1.0000	1.39973	0.0000851	307.25	0.026	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1016.44	1.586	0.9105	3900.605	1.1548	0.9162	-7714.3	58.46	27.99
LPC	184.49	2.408	0.8610	3900.605	1.3312	0.8770	-2999.6	3.51	2.79
HPC	88.44	11.570	0.8614	10105.824	2.1246	0.8985	-13733.0	31.92	30.74
HPT	12.09	4.291	0.9097	216.341	1.3518	0.8892	13733.0		
LPT	56.01	4.351	0.9135	89.369	1.3968	0.8967	10714.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1181.00	1.573	0.9124	3863.413	0.0599	0.8607	1.0235	0.9980	0.9905
LPC	146.87	2.490	0.8219	1.030	0.0000	1.2562	0.9448	1.0476	0.0003
HPC	80.44	11.072	0.8703	9836.410	12.9676	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.200	0.9097	1.300	4.2003	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.520	0.9203	1.005	3.5201	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3661.98	8908.5

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4721	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5094	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11194.6	6443.1	13733.0
LP_Shaft	3744.2	15029.0	10714.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.0528	1001.43	109.77	27.046
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6527	1001.43	109.77	6.217
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	965.51	100.86	34.146
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1185.75	156.14	77.560
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	965.51	100.86	34.146
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1352.21	198.94	118.804
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	965.51	100.86	34.146

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	636.45	20.61	10.268
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.3693	1352.21	198.94	116.068
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.5733	1352.21	198.94	65.147
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1352.21	198.94	118.804
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1352.21	198.94	118.804
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1352.21	198.94	118.804
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	551.90	1.30	6.764
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	551.90	1.30	6.764
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	551.90	1.30	6.764
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	551.90	1.30	6.764

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2677.55	0.9995	0.0230	0.90419	0.02199

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.178	0.9815	1.0000	0.9800	613.40	1.000	1546.6	3010.3
Byp_Nozz	2.370	0.9815	1.0000	0.9800	2006.86	1.000	1030.5	11283.2

50μm, ISA +18R

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**********************************************************************************************************************************
Date:07/05/13    Time:09:24:24    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 24/ 38/ 1/22    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 444.03    Stator 1 exit: 462.65    Stator 2 inlet: 484.18    Stator 2 exit: 491.25
            Stator 3 inlet: 520.20    Stator 3 exit: 528.10    Stator 4 inlet: 555.20    Stator 4 exit: 562.88
            Stator 5 inlet: 583.79    Stator 5 exit: 591.31            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.21
Fan Bypass Relative Humidity       0.15
LPC Inlet Relative Humidity        2.30
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          772.64    Fan/LPC Inlet Flow Velocity        485.44
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.66
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   438.10
Additional Water at LPC Exit   0.0000220
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	396.35	6795.0	0.5974	4059.25	5.2809	772.64	32.336	1.706	100.000	2814.3	2641.2	1834.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	396.35	4.267	457.74	-20.96	0.0000	1282.45	2.854	407.97	3912.3	0.7800	1.40084	0.0000295	396.34	0.012	0.0000
FS1	Inlet.Fl_O	396.35	4.267	457.74	-20.96	0.0000	1282.45	3.150	419.66	4168.2	0.6728	1.40084	0.0000295	396.34	0.012	0.0000
FS12	Splitter.Fl_02	333.25	4.265	457.74	-20.96	0.0000	1078.81	3.174	420.64	3531.8	0.6633	1.40084	0.0000295	333.24	0.010	0.0000
FS2	Splitter.Fl_01	63.10	4.265	457.74	-20.96	0.0000	204.28	3.659	438.10	830.5	0.4729	1.40084	0.0000295	63.10	0.002	0.0000
FS14	Fan.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	6.024	512.21	2606.7	0.5226	1.39992	0.0000295	333.24	0.010	0.0000
FS23	LPC.Fl_O	63.10	10.457	620.27	18.06	0.0000	96.98	9.125	596.65	412.6	0.4457	1.39831	0.0000295	63.10	0.002	0.0000
FS24	VaporIN.Fl_O	63.11	10.457	620.35	17.95	0.0000	96.99	9.125	596.72	412.6	0.4457	1.39831	0.0000515	63.10	0.003	0.0001
FS25	Bleed2.Fl_O	63.11	10.457	620.35	17.95	0.0000	96.99	9.125	596.72	412.6	0.4457	1.39831	0.0000515	63.10	0.003	0.0001
FS3	HPC.Fl_O	60.04	137.970	1373.20	205.57	0.0000	10.41	124.457	1336.34	49.7	0.3921	1.35749	0.0000515	60.04	0.003	0.0001
FS36	Bleed3.Fl_O	46.53	137.970	1373.20	205.57	0.0000	8.07	130.119	1352.13	49.3	0.2948	1.35749	0.0000515	46.53	0.002	0.0001
FS4	Burner.Fl_O	47.66	134.793	2814.34	175.32	0.0242	12.10	127.337	2778.61	74.6	0.3003	1.28479	0.0000515	46.53	0.002	0.0292
FS45	HPT.Fl_O	63.49	31.497	1843.74	-2.52	0.0181	55.86	28.373	1797.37	265.4	0.4001	1.32115	0.0000515	62.36	0.003	0.0219
FS49	LPT.Fl_O	64.23	7.238	1320.50	-142.11	0.0179	208.11	6.243	1270.87	860.2	0.4723	1.34830	0.0000515	63.10	0.003	0.0217
FS5	TEGV.Fl_O	64.23	7.238	1320.57	-142.11	0.0179	208.11	6.243	1270.93	860.2	0.4723	1.34830	0.0000515	63.10	0.003	0.0217
FS8	Core_Nozz.Fl_O	64.23	7.238	1320.70	-142.11	0.0179	208.12	3.870	1121.05	613.4	1.0000	1.34829	0.0000515	63.10	0.003	0.0217
FS17	FanDuctLkg.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	6.024	512.21	2606.7	0.5226	1.39992	0.0000295	333.24	0.010	0.0000
FS171	Bleed15.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	5.854	508.03	2481.9	0.5625	1.39992	0.0000295	333.24	0.010	0.0000
FS172	FanDuct.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	5.854	508.03	2481.9	0.5625	1.39992	0.0000295	333.24	0.010	0.0000
FS173	Byp_Nozz.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	3.833	450.06	2006.9	1.0000	1.39992	0.0000295	333.24	0.010	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1078.81	1.702	0.9114	4139.469	1.1801	0.9178	-9322.3	36.69	23.09
LPC	204.28	2.452	0.8224	4139.469	1.3551	0.8432	-3483.4	2.97	2.24
HPC	96.99	13.194	0.8584	10373.799	2.2136	0.8979	-16345.6	25.80	25.03
HPT	12.10	4.280	0.9118	213.857	1.3470	0.8911	16345.5		
LPT	55.86	4.352	0.9155	90.565	1.3927	0.8988	12805.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1253.47	1.686	0.9132	4100.000	0.0639	0.8607	1.0235	0.9980	0.9905
LPC	166.84	2.748	0.8341	1.093	0.0000	1.2245	0.8307	0.9860	0.0003
HPC	88.21	12.619	0.8672	10097.240	13.5185	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.189	0.9118	1.285	4.1887	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.521	0.9223	1.019	3.5210	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3912.33	9518.1

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4723	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2809	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11345.2	7567.0	16345.5
LP_Shaft	3888.7	17295.0	12805.4

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.3223	1004.61	111.76	31.497
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.7383	1004.61	111.76	7.238
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	966.82	102.38	38.510
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1198.38	160.54	89.515
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	966.82	102.38	38.510
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1373.20	205.57	137.970
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	966.82	102.38	38.510

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	620.35	17.95	10.457
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	7.2054	1373.20	205.57	134.793
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	6.3049	1373.20	205.57	75.708
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1373.20	205.57	137.970
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1373.20	205.57	137.970
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1373.20	205.57	137.970
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2814.34	0.9995	0.0230	1.12757	0.02423

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.536	0.9809	1.0000	0.9800	613.40	1.000	1585.8	3789.3
Byp_Nozz	2.543	0.9810	1.0000	0.9800	2006.86	1.000	1019.5	12523.9

```
****************************************************************************************************************************************
Date:07/05/13    Time:09:25:02    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 20/ 34/ 1/18    Run by: Philip C Jorgenson      PC:    84
Temperature Stator 1 inlet: 450.18    Stator 1 exit: 467.32    Stator 2 inlet: 487.66    Stator 2 exit: 495.55
            Stator 3 inlet: 521.02    Stator 3 exit: 529.17    Stator 4 inlet: 553.24    Stator 4 exit: 560.82
            Stator 5 inlet: 579.81    Stator 5 exit: 587.06             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity        10.00
Fan Face Relative Humidity        4.12
Fan Bypass Relative Humidity      0.18
LPC Inlet Relative Humidity       2.01
LPC Exit Relative Humidity        0.02
HPC Relative Humidity             0.00
Drop Diameter                 0.0000500    Inlet Length                          40.00
Ambient Flow Velocity            772.64    Fan/LPC Inlet Flow Velocity          445.62
Ambient Static Pressure            2.85    Fan/LPC Inlet Static Pressure          3.75
Ambient Static Temperature       407.97    Fan/LPC Inlet Static Temperature     441.19
Additional Water at LPC Exit     0.0000241
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	378.74	5799.1	0.5905	3424.22	5.4245	772.64	29.237	1.498	84.000	2646.5	2486.0	1722.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	378.74	4.267	457.74	-20.96	0.0000	1225.45	2.854	407.97	3738.5	0.7800	1.40084	0.0000295	378.73	0.011	0.0000
FS1	Inlet.Fl_O	378.74	4.267	457.74	-20.96	0.0000	1225.45	3.296	425.15	4168.2	0.6183	1.40084	0.0000295	378.73	0.011	0.0000
FS12	Splitter.Fl_02	319.79	4.265	457.74	-20.96	0.0000	1035.22	3.303	425.46	3531.8	0.6151	1.40084	0.0000295	319.78	0.009	0.0000
FS2	Splitter.Fl_01	58.95	4.265	457.74	-20.96	0.0000	190.84	3.750	441.19	830.5	0.4326	1.40084	0.0000295	58.95	0.002	0.0000
FS14	Fan.Fl_O	319.79	6.911	532.08	-3.13	0.0000	688.70	5.737	504.50	2606.7	0.5226	1.40004	0.0000295	319.78	0.009	0.0000
FS23	LPC.Fl_O	58.95	10.331	612.25	16.13	0.0000	91.11	9.194	592.23	412.6	0.4117	1.39852	0.0000295	58.95	0.002	0.0000
FS24	VaporIN.Fl_O	58.95	10.331	612.33	16.01	0.0000	91.12	9.194	592.31	412.6	0.4117	1.39851	0.0000535	58.95	0.003	0.0001
FS25	Bleed2.Fl_O	58.95	10.331	612.33	16.01	0.0000	91.12	9.194	592.31	412.6	0.4117	1.39851	0.0000535	58.95	0.003	0.0001
FS3	HPC.Fl_O	56.09	124.751	1321.02	192.02	0.0000	10.55	112.160	1284.22	49.7	0.3980	1.36059	0.0000535	56.09	0.003	0.0001
FS36	Bleed3.Fl_O	43.47	124.751	1321.02	192.02	0.0000	8.17	117.446	1300.04	49.3	0.2989	1.36059	0.0000535	43.47	0.002	0.0001
FS4	Burner.Fl_O	44.42	121.878	2646.52	165.07	0.0219	12.10	115.121	2612.38	74.6	0.2995	1.29109	0.0000535	43.47	0.002	0.0264
FS45	HPT.Fl_O	59.22	28.388	1730.19	-2.41	0.0163	55.99	25.556	1685.78	265.4	0.4003	1.32734	0.0000535	58.26	0.003	0.0199
FS49	LPT.Fl_O	59.90	6.516	1234.63	-132.82	0.0161	208.45	5.618	1187.45	860.2	0.4721	1.35480	0.0000535	58.95	0.003	0.0196
FS5	TEGV.Fl_O	59.90	6.516	1234.70	-132.82	0.0161	208.46	5.618	1187.51	860.2	0.4721	1.35480	0.0000535	58.95	0.003	0.0196
FS8	Core_Nozz.Fl_O	59.90	6.516	1234.83	-132.82	0.0161	208.47	3.477	1045.37	613.4	1.0000	1.35479	0.0000535	58.95	0.003	0.0196
FS17	FanDuctLkg.Fl_O	319.79	6.911	532.08	-3.13	0.0000	688.70	5.737	504.50	2606.7	0.5226	1.40004	0.0000295	319.78	0.009	0.0000
FS171	Bleed15.Fl_O	319.79	6.911	532.08	-3.13	0.0000	688.70	5.575	500.38	2481.9	0.5625	1.40004	0.0000295	319.78	0.009	0.0000
FS172	FanDuct.Fl_O	319.79	6.911	532.08	-3.13	0.0000	688.70	5.575	500.38	2481.9	0.5625	1.40004	0.0000295	319.78	0.009	0.0000
FS173	Byp_Nozz.Fl_O	319.79	6.911	532.08	-3.13	0.0000	688.70	3.650	443.27	2006.9	1.0000	1.40004	0.0000295	319.78	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1035.22	1.621	0.9117	3968.836	1.1624	0.9175	-8063.8	53.03	26.46
LPC	190.84	2.422	0.8520	3968.836	1.3376	0.8691	-3093.1	2.96	2.16
HPC	91.12	12.075	0.8607	10180.008	2.1574	0.8986	-14325.4	29.83	28.82
HPT	12.10	4.293	0.9099	215.009	1.3534	0.8903	14325.4		
LPT	55.99	4.357	0.9131	89.635	1.3983	0.8961	11156.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1202.83	1.606	0.9135	3930.994	0.0611	0.8607	1.0235	0.9980	0.9905
LPC	151.27	2.560	0.8233	1.048	0.0000	1.2616	0.9117	1.0349	0.0003
HPC	82.87	11.553	0.8696	9908.615	13.1467	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.202	0.9099	1.292	4.2020	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.525	0.9199	1.008	3.5247	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3738.46	9095.2

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4721	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4245	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11061.0	6802.1	14325.4
LP_Shaft	3728.4	15716.3	11156.9

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.1695	973.46	104.02	28.388
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.6898	973.46	104.02	6.516
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	937.89	95.22	35.503
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1156.06	149.78	81.271
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	937.89	95.22	35.503
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1321.02	192.02	124.751
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	937.89	95.22	35.503

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	612.33	16.01	10.331
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	6.7313	1321.02	192.02	121.878
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	5.8901	1321.02	192.02	68.402
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1321.02	192.02	124.751
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1321.02	192.02	124.751
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1321.02	192.02	124.751
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	532.08	-3.13	6.911
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	532.08	-3.13	6.911
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	532.08	-3.13	6.911
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	532.08	-3.13	6.911

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2646.51	0.9995	0.0230	0.95117	0.02188

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.283	0.9816	1.0000	0.9800	613.40	1.000	1534.8	3240.1
Byp_Nozz	2.422	0.9814	1.0000	0.9800	2006.86	1.000	1011.8	11654.2

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Date:07/05/13 Time:09:25:38 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 19/ 33/ 1/17 Run by: Philip C Jorgenson PC: 79
Temperature Stator 1 inlet: 451.80 Stator 1 exit: 468.53 Stator 2 inlet: 488.56 Stator 2 exit: 496.59
Stator 3 inlet: 521.23 Stator 3 exit: 529.40 Stator 4 inlet: 552.71 Stator 4 exit: 560.26
Stator 5 inlet: 578.73 Stator 5 exit: 585.91 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.88		
Fan Bypass Relative Humidity	0.20		
LPC Inlet Relative Humidity	1.93		
LPC Exit Relative Humidity	0.02		
HPC Relative Humidity	0.00		
Drop Diameter	0.0000500	Inlet Length	40.00
Ambient Flow Velocity	772.64	Fan/LPC Inlet Flow Velocity	433.45
Ambient Static Pressure	2.85	Fan/LPC Inlet Static Pressure	3.78
Ambient Static Temperature	407.97	Fan/LPC Inlet Static Temperature	442.08
Additional Water at LPC Exit	0.0000248		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	373.42	5507.5	0.5896	3247.43	5.4795	772.64	28.311	1.439	79.800	2598.7	2441.8	1690.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	373.42	4.267	457.74	-20.96	0.0000	1208.25	2.854	407.97	3686.0	0.7800	1.40084	0.0000295	373.41	0.011	0.0000
FS1	Inlet.Fl_O	373.42	4.267	457.74	-20.96	0.0000	1208.25	3.335	426.59	4168.2	0.6035	1.40084	0.0000295	373.41	0.011	0.0000
FS12	Splitter.Fl_02	315.79	4.265	457.74	-20.96	0.0000	1022.29	3.338	426.73	3531.8	0.6021	1.40084	0.0000295	315.78	0.009	0.0000
FS2	Splitter.Fl_01	57.63	4.265	457.74	-20.96	0.0000	186.57	3.776	442.08	830.5	0.4204	1.40084	0.0000295	57.63	0.002	0.0000
FS14	Fan.Fl_O	315.79	6.810	529.66	-3.71	0.0000	688.70	5.653	502.21	2606.7	0.5226	1.40008	0.0000295	315.78	0.009	0.0000
FS23	LPC.Fl_O	57.63	10.278	610.11	15.61	0.0000	89.37	9.196	591.06	412.6	0.4020	1.39857	0.0000295	57.63	0.002	0.0000
FS24	VaporIN.Fl_O	57.63	10.278	610.19	15.49	0.0000	89.38	9.195	591.13	412.6	0.4020	1.39856	0.0000543	57.63	0.003	0.0001
FS25	Bleed2.Fl_O	57.63	10.278	610.19	15.49	0.0000	89.38	9.195	591.13	412.6	0.4020	1.39856	0.0000543	57.63	0.003	0.0001
FS3	HPC.Fl_O	54.84	120.799	1306.08	188.16	0.0000	10.59	108.500	1269.30	49.7	0.3997	1.36150	0.0000543	54.83	0.003	0.0001
FS36	Bleed3.Fl_O	42.50	120.799	1306.08	188.16	0.0000	8.20	113.669	1285.13	49.3	0.3000	1.36150	0.0000543	42.50	0.002	0.0001
FS4	Burner.Fl_O	43.40	118.017	2598.74	162.11	0.0212	12.10	111.475	2565.05	74.6	0.2992	1.29291	0.0000543	42.50	0.002	0.0257
FS45	HPT.Fl_O	57.86	27.465	1698.24	-2.37	0.0158	56.02	24.721	1654.44	265.4	0.4003	1.32917	0.0000543	56.96	0.003	0.0193
FS49	LPT.Fl_O	58.53	6.302	1210.65	-130.19	0.0157	208.54	5.433	1164.17	860.2	0.4720	1.35663	0.0000543	57.63	0.003	0.0191
FS5	TEGV.Fl_O	58.53	6.302	1210.71	-130.19	0.0157	208.55	5.433	1164.23	860.2	0.4720	1.35662	0.0000543	57.63	0.003	0.0191
FS8	Core_Nozz.Fl_O	58.53	6.302	1210.85	-130.19	0.0157	208.56	3.362	1024.31	613.4	1.0000	1.35661	0.0000543	57.63	0.003	0.0191
FS17	FanDuctLkg.Fl_O	315.79	6.810	529.66	-3.71	0.0000	688.70	5.653	502.21	2606.7	0.5226	1.40008	0.0000295	315.78	0.009	0.0000
FS171	Bleed15.Fl_O	315.79	6.810	529.66	-3.71	0.0000	688.70	5.493	498.11	2481.9	0.5625	1.40008	0.0000295	315.78	0.009	0.0000
FS172	FanDuct.Fl_O	315.79	6.810	529.66	-3.71	0.0000	688.70	5.493	498.11	2481.9	0.5625	1.40008	0.0000295	315.78	0.009	0.0000
FS173	Byp_Nozz.Fl_O	315.79	6.810	529.66	-3.71	0.0000	688.70	3.596	441.26	2006.9	1.0000	1.40008	0.0000295	315.78	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1022.29	1.597	0.9114	3920.781	1.1571	0.9170	-7703.9	57.15	27.51
LPC	186.57	2.410	0.8583	3920.781	1.3329	0.8746	-2981.8	3.34	2.63
HPC	89.38	11.753	0.8613	10131.613	2.1405	0.8988	-13738.3	31.11	29.98
HPT	12.10	4.297	0.9091	215.567	1.3551	0.8897	13738.3		
LPT	56.02	4.358	0.9123	89.379	1.3998	0.8952	10685.6		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1187.80	1.583	0.9132	3883.396	0.0603	0.8607	1.0235	0.9980	0.9905
LPC	148.17	2.511	0.8223	1.036	0.0000	1.2591	0.9333	1.0438	0.0003
HPC	81.29	11.247	0.8702	9861.511	13.0375	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.206	0.9090	1.296	4.2057	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.526	0.9191	1.005	3.5257	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3685.98	8967.5

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4795	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10989.2	6566.0	13738.3
LP_Shaft	3683.3	15236.9	10685.6

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.1209	964.62	101.82	27.465
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6743	964.62	101.82	6.302
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	929.70	93.19	34.593
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1143.99	146.72	78.801
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	929.70	93.19	34.593
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1306.08	188.16	120.799
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	929.70	93.19	34.593

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	610.19	15.49	10.278
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.5805	1306.08	188.16	118.017
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.7581	1306.08	188.16	66.221
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1306.08	188.16	120.799
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1306.08	188.16	120.799
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1306.08	188.16	120.799
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	529.66	-3.71	6.810
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	529.66	-3.71	6.810
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	529.66	-3.71	6.810
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	529.66	-3.71	6.810

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2598.72	0.9995	0.0230	0.90206	0.02123

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.208	0.9816	1.0000	0.9800	613.40	1.000	1520.2	3077.0
Byp_Nozz	2.386	0.9815	1.0000	0.9800	2006.86	1.000	1009.5	11397.9

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**********************************************************************************************************************************
Date:07/05/13    Time:09:26:12    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    76
Temperature Stator 1 inlet: 452.89    Stator 1 exit: 469.36    Stator 2 inlet: 489.20    Stator 2 exit: 497.31
            Stator 3 inlet: 521.41    Stator 3 exit: 529.59    Stator 4 inlet: 552.40    Stator 4 exit: 559.93
            Stator 5 inlet: 578.07    Stator 5 exit: 585.21            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.72
Fan Bypass Relative Humidity       0.21
LPC Inlet Relative Humidity        1.88
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          772.64    Fan/LPC Inlet Flow Velocity        424.80
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.79
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   442.70
Additional Water at LPC Exit   0.0000254
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	369.51	5300.3	0.5901	3127.57	5.5192	772.64	27.660	1.397	76.800	2566.4	2411.8	1669.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	369.51	4.267	457.74	-20.96	0.0000	1195.58	2.854	407.97	3647.3	0.7800	1.40084	0.0000295	369.49	0.011	0.0000
FS1	Inlet.Fl_O	369.51	4.267	457.74	-20.96	0.0000	1195.58	3.363	427.59	4168.2	0.5930	1.40084	0.0000295	369.49	0.011	0.0000
FS12	Splitter.Fl_02	312.83	4.265	457.74	-20.96	0.0000	1012.69	3.362	427.62	3531.8	0.5927	1.40084	0.0000295	312.82	0.009	0.0000
FS2	Splitter.Fl_01	56.68	4.265	457.74	-20.96	0.0000	183.48	3.795	442.70	830.5	0.4117	1.40084	0.0000295	56.68	0.002	0.0000
FS14	Fan.Fl_O	312.83	6.735	528.01	-4.11	0.0000	688.70	5.591	500.64	2606.7	0.5226	1.40010	0.0000295	312.82	0.009	0.0000
FS23	LPC.Fl_O	56.68	10.238	608.70	15.27	0.0000	88.14	9.193	590.31	412.6	0.3952	1.39860	0.0000295	56.68	0.002	0.0000
FS24	VaporIN.Fl_O	56.68	10.238	608.78	15.15	0.0000	88.15	9.193	590.38	412.6	0.3953	1.39859	0.0000549	56.68	0.003	0.0001
FS25	Bleed2.Fl_O	56.68	10.238	608.78	15.15	0.0000	88.15	9.193	590.38	412.6	0.3953	1.39859	0.0000549	56.68	0.003	0.0001
FS3	HPC.Fl_O	53.93	118.020	1296.01	185.55	0.0000	10.62	105.929	1259.22	49.7	0.4009	1.36211	0.0000549	53.93	0.003	0.0001
FS36	Bleed3.Fl_O	41.80	118.020	1296.01	185.55	0.0000	8.23	111.013	1275.06	49.3	0.3009	1.36211	0.0000549	41.79	0.002	0.0001
FS4	Burner.Fl_O	42.67	115.302	2566.36	160.10	0.0208	12.10	108.907	2532.99	74.6	0.2990	1.29415	0.0000549	41.79	0.002	0.0252
FS45	HPT.Fl_O	56.89	26.817	1676.65	-2.33	0.0155	56.05	24.135	1633.23	265.4	0.4003	1.33042	0.0000549	56.01	0.003	0.0189
FS49	LPT.Fl_O	57.55	6.152	1194.48	-128.41	0.0153	208.62	5.303	1148.48	860.2	0.4719	1.35787	0.0000549	56.68	0.003	0.0187
FS5	TEGV.Fl_O	57.55	6.152	1194.55	-128.41	0.0153	208.62	5.303	1148.54	860.2	0.4719	1.35786	0.0000549	56.68	0.003	0.0187
FS8	Core_Nozz.Fl_O	57.55	6.152	1194.68	-128.40	0.0153	208.63	3.280	1010.13	613.4	1.0000	1.35785	0.0000549	56.68	0.003	0.0187
FS17	FanDuctLkg.Fl_O	312.83	6.735	528.01	-4.11	0.0000	688.70	5.591	500.64	2606.7	0.5226	1.40010	0.0000295	312.82	0.009	0.0000
FS171	Bleed15.Fl_O	312.83	6.735	528.01	-4.11	0.0000	688.70	5.433	496.56	2481.9	0.5625	1.40010	0.0000295	312.82	0.009	0.0000
FS172	FanDuct.Fl_O	312.83	6.735	528.01	-4.11	0.0000	688.70	5.433	496.56	2481.9	0.5625	1.40010	0.0000295	312.82	0.009	0.0000
FS173	Byp_Nozz.Fl_O	312.83	6.735	528.01	-4.11	0.0000	688.70	3.557	439.88	2006.9	1.0000	1.40010	0.0000295	312.82	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1012.69	1.579	0.9094	3888.090	1.1535	0.9150	-7456.6	59.29	28.29
LPC	183.48	2.401	0.8620	3888.090	1.3298	0.8778	-2905.3	3.61	2.87
HPC	88.15	11.528	0.8614	10098.210	2.1289	0.8986	-13334.1	32.00	30.80
HPT	12.10	4.300	0.9085	215.958	1.3562	0.8892	13334.1		
LPT	56.05	4.359	0.9118	89.203	1.4008	0.8945	10362.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1176.65	1.566	0.9112	3851.017	0.0597	0.8607	1.0235	0.9980	0.9905
LPC	146.06	2.477	0.8217	1.027	0.0000	1.2562	0.9482	1.0491	0.0003
HPC	80.17	11.032	0.8703	9828.998	12.9618	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.208	0.9085	1.298	4.2082	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.526	0.9185	1.003	3.5263	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3647.33	8873.4

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4719	860.21
FanDuct	0.0000	0.5625	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5192	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10940.3	6401.3	13334.1
LP_Shaft	3652.6	14899.6	10362.0

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.0858	958.68	100.35	26.817
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.6632	958.68	100.35	6.152
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	924.19	91.83	33.950
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1135.85	144.65	77.063
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	924.19	91.83	33.950
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1296.01	185.55	118.020
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	924.19	91.83	33.950

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	608.78	15.15	10.238
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	6.4718	1296.01	185.55	115.302
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	5.6630	1296.01	185.55	64.689
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1296.01	185.55	118.020
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1296.01	185.55	118.020
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1296.01	185.55	118.020
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	528.01	-4.11	6.735
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	528.01	-4.11	6.735
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	528.01	-4.11	6.735
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	528.01	-4.11	6.735

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2566.34	0.9995	0.0230	0.86877	0.02079

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.156	0.9815	1.0000	0.9800	613.40	1.000	1510.3	2963.0
Byp_Nozz	2.360	0.9815	1.0000	0.9800	2006.86	1.000	1007.9	11210.7

50µm, ISA +36R

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**********************************************************************************************************************************
Date:07/05/13    Time:09:35:17    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 22/ 36/ 1/20    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 463.71    Stator 1 exit: 483.18    Stator 2 inlet: 505.70    Stator 2 exit: 513.15
            Stator 3 inlet: 543.36    Stator 3 exit: 551.67    Stator 4 inlet: 579.94    Stator 4 exit: 588.00
            Stator 5 inlet: 609.83    Stator 5 exit: 617.71            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.44
Fan Bypass Relative Humidity       0.19
LPC Inlet Relative Humidity        2.52
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        495.70
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.66
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   457.44
Additional Water at LPC Exit   0.0000239
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	387.85	6803.9	0.6132	4172.01	5.2838	789.49	32.274	1.710	100.000	2922.5	2743.6	1912.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	387.85	4.267	477.92	-16.44	0.0000	1282.32	2.854	425.97	3912.1	0.7800	1.40068	0.0000851	387.82	0.033	0.0001
FS1	Inlet.Fl_O	387.85	4.267	477.92	-16.44	0.0000	1282.32	3.150	438.17	4168.2	0.6727	1.40068	0.0000851	387.82	0.033	0.0001
FS12	Splitter.Fl_02	326.13	4.265	477.92	-16.44	0.0000	1078.79	3.174	439.19	3531.8	0.6634	1.40068	0.0000851	326.10	0.028	0.0001
FS2	Splitter.Fl_01	61.72	4.265	477.92	-16.44	0.0000	204.17	3.659	457.44	830.5	0.4726	1.40068	0.0000851	61.72	0.005	0.0001
FS14	Fan.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	6.025	534.77	2606.7	0.5227	1.39952	0.0000851	326.10	0.028	0.0001
FS23	LPC.Fl_O	61.72	10.479	647.76	24.36	0.0000	96.73	9.153	623.27	412.6	0.4443	1.39757	0.0000851	61.72	0.005	0.0001
FS24	VaporIN.Fl_O	61.72	10.479	647.85	24.25	0.0000	96.74	9.152	623.36	412.6	0.4444	1.39757	0.0001090	61.72	0.007	0.0001
FS25	Bleed2.Fl_O	61.72	10.479	647.85	24.25	0.0000	96.74	9.152	623.36	412.6	0.4444	1.39757	0.0001090	61.72	0.007	0.0001
FS3	HPC.Fl_O	58.73	137.704	1427.67	219.49	0.0000	10.40	124.235	1389.65	49.7	0.3922	1.35437	0.0001090	58.72	0.006	0.0001
FS36	Bleed3.Fl_O	45.52	137.704	1427.67	219.49	0.0000	8.06	129.878	1405.97	49.3	0.2950	1.35437	0.0001090	45.51	0.005	0.0001
FS4	Burner.Fl_O	46.67	134.533	2922.53	187.25	0.0255	12.10	127.111	2885.79	74.6	0.3007	1.28095	0.0001090	45.51	0.005	0.0307
FS45	HPT.Fl_O	62.16	31.492	1921.42	2.55	0.0190	55.83	28.372	1873.58	265.4	0.4005	1.31732	0.0001090	60.99	0.007	0.0231
FS49	LPT.Fl_O	62.88	7.251	1379.99	-143.20	0.0188	207.89	6.256	1328.67	860.2	0.4725	1.34412	0.0001090	61.72	0.007	0.0228
FS5	TEGV.Fl_O	62.88	7.251	1380.05	-143.20	0.0188	207.90	6.256	1328.73	860.2	0.4725	1.34412	0.0001090	61.72	0.007	0.0228
FS8	Core_Nozz.Fl_O	62.88	7.251	1380.18	-143.20	0.0188	207.91	3.882	1173.58	613.4	1.0000	1.34411	0.0001090	61.72	0.007	0.0228
FS17	FanDuctLkg.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	6.025	534.77	2606.7	0.5227	1.39952	0.0000851	326.10	0.028	0.0001
FS171	Bleed15.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	5.854	530.41	2481.9	0.5626	1.39952	0.0000851	326.10	0.028	0.0001
FS172	FanDuct.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	5.854	530.41	2481.9	0.5626	1.39952	0.0000851	326.10	0.028	0.0001
FS173	Byp_Nozz.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	3.833	469.91	2006.9	1.0000	1.39952	0.0000851	326.10	0.028	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1078.79	1.702	0.9114	4139.469	1.1801	0.9178	-9525.9	36.68	23.09
LPC	204.17	2.457	0.8233	4139.469	1.3554	0.8440	-3563.0	2.97	2.24
HPC	96.74	13.140	0.8585	10363.492	2.2037	0.8978	-16636.9	26.01	25.23
HPT	12.10	4.272	0.9122	214.250	1.3428	0.8903	16636.9		
LPT	55.83	4.343	0.9167	90.650	1.3888	0.9005	13088.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1253.45	1.686	0.9132	4100.000	0.0639	0.8607	1.0235	0.9980	0.9905
LPC	166.84	2.748	0.8341	1.093	0.0000	1.2237	0.8337	0.9870	0.0003
HPC	87.99	12.568	0.8673	10087.208	13.4977	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.181	0.9122	1.288	4.1813	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.515	0.9235	1.020	3.5146	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3912.12	9517.0

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4725	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2838	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11582.4	7544.1	16636.9
LP_Shaft	3973.5	17300.3	13088.7

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.2714	1046.42	121.87	31.492
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.7222	1046.42	121.87	7.251
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	1007.29	112.10	38.469
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1246.92	172.63	89.359
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	1007.29	112.10	38.469
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	1427.67	219.49	137.704
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	1007.29	112.10	38.469

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	647.85	24.25	10.479
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	7.0476	1427.67	219.49	134.533
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	6.1668	1427.67	219.49	75.594
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1427.67	219.49	137.704
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1427.67	219.49	137.704
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1427.67	219.49	137.704
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2922.53	0.9995	0.0230	1.15889	0.02546

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.541	0.9809	1.0000	0.9800	613.40	1.000	1620.2	3797.3
Byp_Nozz	2.543	0.9810	1.0000	0.9800	2006.86	1.000	1041.7	12523.7

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********************************************************************************************************************************
Date:07/05/13    Time:09:35:58    Model:                                  Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 25/ 39/ 1/23    Run by: Philip C Jorgenson      PC:    84
Temperature Stator 1 inlet: 469.60    Stator 1 exit: 487.63    Stator 2 inlet: 508.98    Stator 2 exit: 517.20
            Stator 3 inlet: 544.05    Stator 3 exit: 552.57    Stator 4 inlet: 577.92    Stator 4 exit: 585.87
            Stator 5 inlet: 605.84    Stator 5 exit: 613.45             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity        10.00
Fan Face Relative Humidity        4.44
Fan Bypass Relative Humidity      0.23
LPC Inlet Relative Humidity       2.25
LPC Exit Relative Humidity        0.03
HPC Relative Humidity             0.00
Drop Diameter                 0.0000500    Inlet Length                         40.00
Ambient Flow Velocity            789.49    Fan/LPC Inlet Flow Velocity         458.59
Ambient Static Pressure            2.85    Fan/LPC Inlet Static Pressure         3.74
Ambient Static Temperature       425.97    Fan/LPC Inlet Static Temperature    460.40
Additional Water at LPC Exit     0.0000276
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	372.15	5891.2	0.6059	3569.34	5.4136	789.49	29.445	1.518	84.000	2762.8	2595.8	1803.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	372.15	4.267	477.92	-16.44	0.0000	1230.41	2.854	425.97	3753.7	0.7800	1.40068	0.0000851	372.11	0.032	0.0001
FS1	Inlet.Fl_O	372.15	4.267	477.92	-16.44	0.0000	1230.41	3.284	443.45	4168.2	0.6228	1.40068	0.0000851	372.11	0.032	0.0001
FS12	Splitter.Fl_02	314.12	4.265	477.92	-16.44	0.0000	1039.08	3.292	443.82	3531.8	0.6192	1.40068	0.0000851	314.09	0.027	0.0001
FS2	Splitter.Fl_01	58.02	4.265	477.92	-16.44	0.0000	191.94	3.743	460.40	830.5	0.4358	1.40068	0.0000851	58.02	0.005	0.0001
FS14	Fan.Fl_O	314.12	6.942	556.22	2.34	0.0000	688.65	5.763	527.41	2606.7	0.5226	1.39966	0.0000851	314.09	0.027	0.0001
FS23	LPC.Fl_O	58.02	10.355	639.92	22.47	0.0000	91.47	9.205	618.83	412.6	0.4138	1.39779	0.0000851	58.02	0.005	0.0001
FS24	VaporIN.Fl_O	58.03	10.355	640.02	22.34	0.0000	91.48	9.204	618.91	412.6	0.4139	1.39778	0.0001126	58.02	0.007	0.0001
FS25	Bleed2.Fl_O	58.03	10.355	640.02	22.34	0.0000	91.48	9.204	618.91	412.6	0.4139	1.39778	0.0001126	58.02	0.007	0.0001
FS3	HPC.Fl_O	55.21	125.632	1378.40	206.59	0.0000	10.53	112.994	1340.39	49.7	0.3977	1.35718	0.0001126	55.21	0.006	0.0001
FS36	Bleed3.Fl_O	42.79	125.632	1378.40	206.59	0.0000	8.16	118.300	1356.73	49.3	0.2987	1.35718	0.0001126	42.78	0.005	0.0001
FS4	Burner.Fl_O	43.78	122.738	2762.82	177.64	0.0232	12.10	115.950	2727.55	74.6	0.2999	1.28688	0.0001126	42.78	0.005	0.0280
FS45	HPT.Fl_O	58.34	28.643	1812.34	2.67	0.0173	55.95	25.791	1766.39	265.4	0.4006	1.32301	0.0001126	57.34	0.006	0.0211
FS49	LPT.Fl_O	59.02	6.587	1297.07	-134.27	0.0171	208.22	5.681	1248.05	860.2	0.4723	1.35025	0.0001126	58.02	0.007	0.0208
FS5	TEGV.Fl_O	59.02	6.587	1297.13	-134.27	0.0171	208.22	5.681	1248.12	860.2	0.4723	1.35024	0.0001126	58.02	0.007	0.0208
FS8	Core_Nozz.Fl_O	59.02	6.587	1297.26	-134.27	0.0171	208.23	3.520	1100.26	613.4	1.0000	1.35023	0.0001126	58.02	0.007	0.0208
FS17	FanDuctLkg.Fl_O	314.12	6.942	556.22	2.34	0.0000	688.65	5.763	527.41	2606.7	0.5226	1.39966	0.0000851	314.09	0.027	0.0001
FS171	Bleed15.Fl_O	314.12	6.942	556.22	2.34	0.0000	688.65	5.600	523.11	2481.9	0.5626	1.39966	0.0000851	314.09	0.027	0.0001
FS172	FanDuct.Fl_O	314.12	6.942	556.22	2.34	0.0000	688.65	5.600	523.11	2481.9	0.5626	1.39966	0.0000851	314.09	0.027	0.0001
FS173	Byp_Nozz.Fl_O	314.12	6.942	556.22	2.34	0.0000	688.65	3.666	463.43	2006.9	1.0000	1.39966	0.0000851	314.09	0.027	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1039.08	1.628	0.9120	3982.719	1.1638	0.9179	-8347.6	51.73	26.15
LPC	191.94	2.428	0.8503	3982.719	1.3390	0.8676	-3194.6	2.91	2.10
HPC	91.48	12.132	0.8606	10189.485	2.1537	0.8985	-14760.1	29.69	28.69
HPT	12.10	4.285	0.9109	215.341	1.3490	0.8905	14760.1		
LPT	55.95	4.348	0.9147	89.803	1.3941	0.8982	11542.1		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1207.31	1.613	0.9139	3944.744	0.0614	0.8607	1.0235	0.9980	0.9905
LPC	152.37	2.575	0.8239	1.052	0.0000	1.2597	0.9067	1.0320	0.0003
HPC	83.20	11.608	0.8695	9917.840	13.1589	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.194	0.9109	1.294	4.1941	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.518	0.9215	1.010	3.5183	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3753.73	9131.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4723	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4136	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11318.9	6848.9	14760.1
LP_Shaft	3823.1	15856.5	11542.1

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.1354	1016.84	114.46	28.643
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6789	1016.84	114.46	6.587
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	979.79	105.25	35.716
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1206.89	162.37	81.826
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	979.79	105.25	35.716
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	1378.40	206.59	125.632
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	979.79	105.25	35.716

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	640.02	22.34	10.355
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.6254	1378.40	206.59	122.738
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.7974	1378.40	206.59	68.916
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1378.40	206.59	125.632
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1378.40	206.59	125.632
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1378.40	206.59	125.632
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	556.22	2.34	6.942
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	556.22	2.34	6.942
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	556.22	2.34	6.942
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	556.22	2.34	6.942

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2762.81	0.9995	0.0230	0.99148	0.02317

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.308	0.9816	1.0000	0.9800	613.40	1.000	1572.2	3292.6
Byp_Nozz	2.432	0.9814	1.0000	0.9800	2006.86	1.000	1034.5	11730.3

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**********************************************************************************************************************************
Date:07/05/13    Time:09:36:33    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 19/ 33/ 1/17    Run by: Philip C Jorgenson      PC:    79
Temperature Stator 1 inlet: 471.32    Stator 1 exit: 488.91    Stator 2 inlet: 509.92    Stator 2 exit: 518.28
            Stator 3 inlet: 544.23    Stator 3 exit: 552.77    Stator 4 inlet: 577.31    Stator 4 exit: 585.21
            Stator 5 inlet: 604.64    Stator 5 exit: 612.16            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.19
Fan Bypass Relative Humidity       0.25
LPC Inlet Relative Humidity        2.16
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        446.07
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.77
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   461.34
Additional Water at LPC Exit   0.0000291
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	366.89	5594.6	0.6047	3382.81	5.4673	789.49	28.509	1.457	79.800	2712.2	2548.9	1770.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	366.89	4.267	477.92	-16.44	0.0000	1213.02	2.854	425.97	3700.7	0.7800	1.40068	0.0000851	366.86	0.031	0.0001
FS1	Inlet.Fl_O	366.89	4.267	477.92	-16.44	0.0000	1213.02	3.325	444.99	4168.2	0.6076	1.40068	0.0000851	366.86	0.031	0.0001
FS12	Splitter.Fl_02	310.16	4.265	477.92	-16.44	0.0000	1025.97	3.328	445.18	3531.8	0.6058	1.40068	0.0000851	310.13	0.026	0.0001
FS2	Splitter.Fl_01	56.73	4.265	477.92	-16.44	0.0000	187.66	3.769	461.34	830.5	0.4235	1.40068	0.0000851	56.72	0.005	0.0001
FS14	Fan.Fl_O	310.16	6.838	553.67	1.73	0.0000	688.65	5.677	524.99	2606.7	0.5226	1.39970	0.0000851	310.13	0.026	0.0001
FS23	LPC.Fl_O	56.73	10.300	637.58	21.91	0.0000	89.74	9.205	617.51	412.6	0.4041	1.39785	0.0000851	56.72	0.005	0.0001
FS24	VaporIN.Fl_O	56.73	10.300	637.68	21.76	0.0000	89.75	9.205	617.59	412.6	0.4042	1.39785	0.0001142	56.72	0.006	0.0001
FS25	Bleed2.Fl_O	56.73	10.300	637.68	21.76	0.0000	89.75	9.205	617.59	412.6	0.4042	1.39785	0.0001142	56.72	0.006	0.0001
FS3	HPC.Fl_O	53.98	121.641	1362.71	202.50	0.0000	10.57	109.293	1324.70	49.7	0.3995	1.35810	0.0001142	53.97	0.006	0.0001
FS36	Bleed3.Fl_O	41.83	121.641	1362.71	202.50	0.0000	8.19	114.481	1341.05	49.3	0.3000	1.35810	0.0001142	41.83	0.005	0.0001
FS4	Burner.Fl_O	42.77	118.840	2712.18	174.55	0.0225	12.10	112.266	2677.40	74.6	0.2996	1.28878	0.0001142	41.83	0.005	0.0272
FS45	HPT.Fl_O	57.01	27.707	1778.22	2.72	0.0168	55.99	24.944	1732.88	265.4	0.4006	1.32487	0.0001142	56.06	0.006	0.0204
FS49	LPT.Fl_O	57.67	6.370	1271.28	-131.47	0.0166	208.31	5.493	1223.01	860.2	0.4721	1.35221	0.0001142	56.72	0.006	0.0202
FS5	TEGV.Fl_O	57.67	6.370	1271.34	-131.47	0.0166	208.31	5.493	1223.07	860.2	0.4722	1.35220	0.0001142	56.72	0.006	0.0202
FS8	Core_Nozz.Fl_O	57.67	6.370	1271.47	-131.47	0.0166	208.33	3.402	1077.52	613.4	1.0000	1.35219	0.0001142	56.72	0.006	0.0202
FS17	FanDuctLkg.Fl_O	310.16	6.838	553.67	1.73	0.0000	688.65	5.677	524.99	2606.7	0.5226	1.39970	0.0000851	310.13	0.026	0.0001
FS171	Bleed15.Fl_O	310.16	6.838	553.67	1.73	0.0000	688.65	5.516	520.71	2481.9	0.5626	1.39970	0.0000851	310.13	0.026	0.0001
FS172	FanDuct.Fl_O	310.16	6.838	553.67	1.73	0.0000	688.65	5.516	520.71	2481.9	0.5626	1.39970	0.0000851	310.13	0.026	0.0001
FS173	Byp_Nozz.Fl_O	310.16	6.838	553.67	1.73	0.0000	688.65	3.612	461.30	2006.9	1.0000	1.39970	0.0000851	310.13	0.026	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1025.97	1.604	0.9117	3933.633	1.1585	0.9174	-7973.7	56.33	27.21
LPC	187.66	2.415	0.8569	3933.633	1.3341	0.8734	-3078.1	3.24	2.50
HPC	89.75	11.810	0.8612	10141.348	2.1370	0.8987	-14154.9	30.97	29.86
HPT	12.10	4.289	0.9102	215.920	1.3509	0.8900	14154.9		
LPT	55.99	4.350	0.9140	89.543	1.3957	0.8973	11051.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1192.08	1.590	0.9136	3896.126	0.0605	0.8607	1.0235	0.9980	0.9905
LPC	149.00	2.524	0.8226	1.039	0.0000	1.2595	0.9287	1.0418	0.0003
HPC	81.63	11.300	0.8701	9870.986	13.0483	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.198	0.9102	1.298	4.1981	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.519	0.9208	1.007	3.5195	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3700.69	9002.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4721	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4673	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11244.8	6611.3	14154.9
LP_Shaft	3775.9	15372.2	11051.7

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.0877	1007.51	112.13	27.707
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6638	1007.51	112.13	6.370
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	971.12	103.09	34.795
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1194.17	159.12	79.332
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	971.12	103.09	34.795
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1362.71	202.50	121.641
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	971.12	103.09	34.795

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	637.68	21.76	10.300
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.4776	1362.71	202.50	118.840
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.6680	1362.71	202.50	66.712
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1362.71	202.50	121.641
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1362.71	202.50	121.641
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1362.71	202.50	121.641
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	553.67	1.73	6.838
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	553.67	1.73	6.838
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	553.67	1.73	6.838
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	553.67	1.73	6.838

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2712.16	0.9995	0.0230	0.93967	0.02246

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.232	0.9816	1.0000	0.9800	613.40	1.000	1556.9	3126.8
Byp_Nozz	2.396	0.9814	1.0000	0.9800	2006.86	1.000	1032.2	11470.4

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**********************************************************************************************************************************
Date:07/05/13    Time:09:37:07    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 19/ 33/ 1/17    Run by: Philip C Jorgenson      PC:    76
Temperature Stator 1 inlet: 472.50    Stator 1 exit: 489.81    Stator 2 inlet: 510.62    Stator 2 exit: 519.08
            Stator 3 inlet: 544.45    Stator 3 exit: 553.01    Stator 4 inlet: 577.01    Stator 4 exit: 584.90
            Stator 5 inlet: 603.97    Stator 5 exit: 611.45            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.03
Fan Bypass Relative Humidity       0.26
LPC Inlet Relative Humidity        2.11
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        437.10
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.79
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   462.00
Additional Water at LPC Exit   0.0000303
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	363.05	5383.7	0.6046	3254.93	5.5077	789.49	27.845	1.415	76.800	2677.4	2516.8	1746.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	363.05	4.267	477.92	-16.44	0.0000	1200.34	2.854	425.97	3662.0	0.7800	1.40068	0.0000851	363.02	0.031	0.0001
FS1	Inlet.Fl_O	363.05	4.267	477.92	-16.44	0.0000	1200.34	3.353	446.06	4168.2	0.5970	1.40068	0.0000851	363.02	0.031	0.0001
FS12	Splitter.Fl_02	307.26	4.265	477.92	-16.44	0.0000	1016.40	3.353	446.12	3531.8	0.5963	1.40068	0.0000851	307.24	0.026	0.0001
FS2	Splitter.Fl_01	55.79	4.265	477.92	-16.44	0.0000	184.54	3.788	462.00	830.5	0.4147	1.40068	0.0000851	55.78	0.005	0.0001
FS14	Fan.Fl_O	307.26	6.764	551.89	1.30	0.0000	688.66	5.615	523.30	2606.7	0.5226	1.39973	0.0000851	307.24	0.026	0.0001
FS23	LPC.Fl_O	55.79	10.263	636.11	21.55	0.0000	88.47	9.207	616.75	412.6	0.3971	1.39789	0.0000851	55.78	0.005	0.0001
FS24	VaporIN.Fl_O	55.79	10.263	636.21	21.40	0.0000	88.48	9.207	616.83	412.6	0.3972	1.39789	0.0001153	55.78	0.006	0.0001
FS25	Bleed2.Fl_O	55.79	10.263	636.21	21.40	0.0000	88.48	9.207	616.83	412.6	0.3972	1.39789	0.0001153	55.78	0.006	0.0001
FS3	HPC.Fl_O	53.08	118.805	1351.96	199.70	0.0000	10.60	106.666	1313.94	49.7	0.4008	1.35873	0.0001153	53.08	0.006	0.0001
FS36	Bleed3.Fl_O	41.14	118.805	1351.96	199.70	0.0000	8.22	111.768	1330.33	49.3	0.3009	1.35873	0.0001153	41.13	0.005	0.0001
FS4	Burner.Fl_O	42.04	116.069	2677.35	172.42	0.0220	12.09	109.646	2642.93	74.6	0.2994	1.29010	0.0001153	41.13	0.005	0.0266
FS45	HPT.Fl_O	56.04	27.045	1754.90	2.78	0.0164	56.01	24.346	1709.96	265.4	0.4007	1.32616	0.0001153	55.13	0.006	0.0200
FS49	LPT.Fl_O	56.69	6.216	1253.67	-129.52	0.0162	208.39	5.359	1205.91	860.2	0.4721	1.35355	0.0001153	55.78	0.006	0.0198
FS5	TEGV.Fl_O	56.69	6.216	1253.74	-129.52	0.0162	208.39	5.359	1205.97	860.2	0.4721	1.35355	0.0001153	55.78	0.006	0.0198
FS8	Core_Nozz.Fl_O	56.69	6.216	1253.87	-129.52	0.0162	208.40	3.319	1062.03	613.4	1.0000	1.35354	0.0001153	55.78	0.006	0.0198
FS17	FanDuctLkg.Fl_O	307.26	6.764	551.89	1.30	0.0000	688.66	5.615	523.30	2606.7	0.5226	1.39973	0.0000851	307.24	0.026	0.0001
FS171	Bleed15.Fl_O	307.26	6.764	551.89	1.30	0.0000	688.66	5.456	519.03	2481.9	0.5626	1.39973	0.0000851	307.24	0.026	0.0001
FS172	FanDuct.Fl_O	307.26	6.764	551.89	1.30	0.0000	688.66	5.456	519.03	2481.9	0.5626	1.39973	0.0000851	307.24	0.026	0.0001
FS173	Byp_Nozz.Fl_O	307.26	6.764	551.89	1.30	0.0000	688.66	3.572	459.82	2006.9	1.0000	1.39973	0.0000851	307.24	0.026	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1016.40	1.586	0.9105	3900.457	1.1548	0.9162	-7713.2	58.47	27.99
LPC	184.54	2.406	0.8609	3900.457	1.3310	0.8769	-2998.9	3.51	2.79
HPC	88.48	11.576	0.8614	10106.712	2.1250	0.8986	-13732.3	31.90	30.71
HPT	12.09	4.292	0.9097	216.327	1.3521	0.8896	13732.3		
LPT	56.01	4.351	0.9135	89.376	1.3969	0.8967	10712.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1180.95	1.573	0.9124	3863.266	0.0599	0.8607	1.0235	0.9980	0.9905
LPC	146.86	2.490	0.8219	1.030	0.0000	1.2566	0.9440	1.0474	0.0003
HPC	80.47	11.078	0.8703	9837.273	12.9696	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.201	0.9097	1.300	4.2005	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.520	0.9203	1.005	3.5203	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3661.99	8908.5

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4721	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5077	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11193.4	6443.4	13732.3
LP_Shaft	3744.1	15026.5	10712.0

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.0530	1001.18	110.55	27.045
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6527	1001.18	110.55	6.216
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	965.26	101.64	34.142
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1185.50	156.91	77.559
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	965.26	101.64	34.142
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1351.96	199.70	118.805
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	965.26	101.64	34.142

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	636.21	21.40	10.263
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.3700	1351.96	199.70	116.069
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.5739	1351.96	199.70	65.147
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1351.96	199.70	118.805
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1351.96	199.70	118.805
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1351.96	199.70	118.805
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	551.89	1.30	6.764
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	551.89	1.30	6.764
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	551.89	1.30	6.764
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	551.89	1.30	6.764

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2677.34	0.9995	0.0230	0.90415	0.02198

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.178	0.9815	1.0000	0.9800	613.40	1.000	1546.4	3009.8
Byp_Nozz	2.370	0.9815	1.0000	0.9800	2006.86	1.000	1030.5	11282.4

100µm, ISA +18R

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**********************************************************************************************************************************
Date:07/05/13    Time:09:47:54    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 24/ 38/ 1/22    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 444.03    Stator 1 exit: 462.65    Stator 2 inlet: 484.17    Stator 2 exit: 491.24
            Stator 3 inlet: 520.19    Stator 3 exit: 528.10    Stator 4 inlet: 555.19    Stator 4 exit: 562.88
            Stator 5 inlet: 583.79    Stator 5 exit: 591.31            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.21
Fan Bypass Relative Humidity       0.15
LPC Inlet Relative Humidity        2.30
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          772.64    Fan/LPC Inlet Flow Velocity        485.45
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.66
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   438.10
Additional Water at LPC Exit   0.0000151
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	396.35	6794.7	0.5974	4059.10	5.2809	772.64	32.334	1.706	100.000	2814.3	2641.1	1834.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	396.35	4.267	457.74	-20.96	0.0000	1282.45	2.854	407.97	3912.3	0.7800	1.40084	0.0000295	396.34	0.012	0.0000
FS1	Inlet.Fl_O	396.35	4.267	457.74	-20.96	0.0000	1282.45	3.150	419.65	4168.2	0.6728	1.40084	0.0000295	396.34	0.012	0.0000
FS12	Splitter.Fl_02	333.25	4.265	457.74	-20.96	0.0000	1078.81	3.174	420.64	3531.8	0.6633	1.40084	0.0000295	333.24	0.010	0.0000
FS2	Splitter.Fl_01	63.11	4.265	457.74	-20.96	0.0000	204.29	3.659	438.10	830.5	0.4730	1.40084	0.0000295	63.10	0.002	0.0000
FS14	Fan.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	6.024	512.21	2606.7	0.5226	1.39992	0.0000295	333.24	0.010	0.0000
FS23	LPC.Fl_O	63.11	10.456	620.26	18.06	0.0000	96.99	9.124	596.63	412.6	0.4457	1.39831	0.0000295	63.10	0.002	0.0000
FS24	VaporIN.Fl_O	63.11	10.456	620.33	17.99	0.0000	97.00	9.124	596.69	412.6	0.4458	1.39831	0.0000445	63.10	0.003	0.0000
FS25	Bleed2.Fl_O	63.11	10.456	620.33	17.99	0.0000	97.00	9.124	596.69	412.6	0.4458	1.39831	0.0000445	63.10	0.003	0.0000
FS3	HPC.Fl_O	60.05	137.963	1373.15	205.60	0.0000	10.41	124.449	1336.29	49.7	0.3921	1.35750	0.0000445	60.04	0.003	0.0000
FS36	Bleed3.Fl_O	46.54	137.963	1373.15	205.60	0.0000	8.07	130.111	1352.09	49.3	0.2948	1.35750	0.0000445	46.53	0.002	0.0000
FS4	Burner.Fl_O	47.66	134.786	2814.26	175.35	0.0242	12.11	127.330	2778.52	74.6	0.3003	1.28479	0.0000445	46.53	0.002	0.0292
FS45	HPT.Fl_O	63.50	31.495	1843.67	-2.48	0.0181	55.86	28.371	1797.31	265.4	0.4001	1.32115	0.0000445	62.36	0.003	0.0219
FS49	LPT.Fl_O	64.23	7.237	1320.43	-142.07	0.0179	208.13	6.242	1270.79	860.2	0.4724	1.34831	0.0000445	63.10	0.003	0.0217
FS5	TEGV.Fl_O	64.23	7.237	1320.50	-142.07	0.0179	208.13	6.242	1270.85	860.2	0.4724	1.34830	0.0000445	63.10	0.003	0.0217
FS8	Core_Nozz.Fl_O	64.23	7.237	1320.63	-142.07	0.0179	208.14	3.870	1120.99	613.4	1.0000	1.34829	0.0000445	63.10	0.003	0.0217
FS17	FanDuctLkg.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	6.024	512.21	2606.7	0.5226	1.39992	0.0000295	333.24	0.010	0.0000
FS171	Bleed15.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	5.854	508.03	2481.9	0.5625	1.39992	0.0000295	333.24	0.010	0.0000
FS172	FanDuct.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	5.854	508.03	2481.9	0.5625	1.39992	0.0000295	333.24	0.010	0.0000
FS173	Byp_Nozz.Fl_O	333.25	7.257	540.20	-1.18	0.0000	688.69	3.833	450.06	2006.9	1.0000	1.39992	0.0000295	333.24	0.010	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1078.81	1.702	0.9114	4139.469	1.1801	0.9178	-9322.3	36.69	23.09
LPC	204.29	2.452	0.8224	4139.469	1.3550	0.8432	-3483.1	2.97	2.24
HPC	97.00	13.194	0.8584	10373.882	2.2136	0.8979	-16345.1	25.80	25.03
HPT	12.11	4.280	0.9118	213.858	1.3470	0.8911	16345.1		
LPT	55.86	4.352	0.9155	90.566	1.3928	0.8988	12805.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1253.47	1.686	0.9132	4100.000	0.0639	0.8607	1.0235	0.9980	0.9905
LPC	166.84	2.748	0.8341	1.093	0.0000	1.2244	0.8306	0.9860	0.0003
HPC	88.22	12.620	0.8672	10097.321	13.5183	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.189	0.9118	1.285	4.1887	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.521	0.9223	1.019	3.5213	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3912.34	9518.2
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4724	860.21
FanDuct	0.0000	0.5625	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2809	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11345.1	7566.9	16345.1
LP_Shaft	3888.7	17295.0	12805.5

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.3223	1004.57	111.79	31.495
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.7383	1004.57	111.79	7.237
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	966.78	102.41	38.508
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1198.34	160.57	89.511
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	966.78	102.41	38.508
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1373.15	205.60	137.963
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	966.78	102.41	38.508

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	620.33	17.99	10.456
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	7.2054	1373.15	205.60	134.786
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	6.3049	1373.15	205.60	75.704
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1373.15	205.60	137.963
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1373.15	205.60	137.963
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1373.15	205.60	137.963
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	540.20	-1.18	7.257

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2814.25	0.9995	0.0230	1.12753	0.02423

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.536	0.9809	1.0000	0.9800	613.40	1.000	1585.8	3789.0
Byp_Nozz	2.543	0.9810	1.0000	0.9800	2006.86	1.000	1019.5	12523.9

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**********************************************************************************************************************************
Date:07/05/13    Time:09:48:31    Model:                                  Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 19/ 33/ 1/17    Run by: Philip C Jorgenson      PC:    84
Temperature Stator 1 inlet: 450.18    Stator 1 exit: 467.32    Stator 2 inlet: 487.66    Stator 2 exit: 495.55
            Stator 3 inlet: 521.02    Stator 3 exit: 529.17    Stator 4 inlet: 553.24    Stator 4 exit: 560.82
            Stator 5 inlet: 579.81    Stator 5 exit: 587.06             Unblocked   Percent Blockage: 0.00
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Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	4.12		
Fan Bypass Relative Humidity	0.18		
LPC Inlet Relative Humidity	2.01		
LPC Exit Relative Humidity	0.02		
HPC Relative Humidity	0.00		
Drop Diameter	0.0001000	Inlet Length	40.00
Ambient Flow Velocity	772.64	Fan/LPC Inlet Flow Velocity	445.63
Ambient Static Pressure	2.85	Fan/LPC Inlet Static Pressure	3.75
Ambient Static Temperature	407.97	Fan/LPC Inlet Static Temperature	441.19
Additional Water at LPC Exit	0.0000152		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	378.74	5799.0	0.5905	3424.20	5.4244	772.64	29.236	1.498	84.000	2646.5	2485.9	1722.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	378.74	4.267	457.74	-20.96	0.0000	1225.46	2.854	407.97	3738.5	0.7800	1.40084	0.0000295	378.73	0.011	0.0000
FS1	Inlet.Fl_O	378.74	4.267	457.74	-20.96	0.0000	1225.46	3.296	425.15	4168.2	0.6183	1.40084	0.0000295	378.73	0.011	0.0000
FS12	Splitter.Fl_02	319.79	4.265	457.74	-20.96	0.0000	1035.23	3.303	425.46	3531.8	0.6151	1.40084	0.0000295	319.78	0.009	0.0000
FS2	Splitter.Fl_01	58.95	4.265	457.74	-20.96	0.0000	190.85	3.750	441.19	830.5	0.4326	1.40084	0.0000295	58.95	0.002	0.0000
FS14	Fan.Fl_O	319.79	6.911	532.08	-3.13	0.0000	688.70	5.737	504.50	2606.7	0.5226	1.40004	0.0000295	319.78	0.009	0.0000
FS23	LPC.Fl_O	58.95	10.330	612.23	16.12	0.0000	91.12	9.193	592.21	412.6	0.4118	1.39852	0.0000295	58.95	0.002	0.0000
FS24	VaporIN.Fl_O	58.95	10.330	612.30	16.05	0.0000	91.13	9.193	592.28	412.6	0.4118	1.39851	0.0000446	58.95	0.003	0.0000
FS25	Bleed2.Fl_O	58.95	10.330	612.30	16.05	0.0000	91.13	9.193	592.28	412.6	0.4118	1.39851	0.0000446	58.95	0.003	0.0000
FS3	HPC.Fl_O	56.09	124.744	1320.99	192.07	0.0000	10.55	112.152	1284.18	49.7	0.3980	1.36059	0.0000446	56.09	0.003	0.0000
FS36	Bleed3.Fl_O	43.47	124.744	1320.99	192.07	0.0000	8.17	117.439	1300.01	49.3	0.2989	1.36059	0.0000446	43.47	0.002	0.0000
FS4	Burner.Fl_O	44.42	121.871	2646.49	165.11	0.0219	12.10	115.114	2612.35	74.6	0.2995	1.29109	0.0000446	43.47	0.002	0.0264
FS45	HPT.Fl_O	59.22	28.387	1730.17	-2.36	0.0163	55.99	25.554	1685.75	265.4	0.4003	1.32735	0.0000446	58.26	0.003	0.0199
FS49	LPT.Fl_O	59.91	6.515	1234.61	-132.77	0.0161	208.47	5.617	1187.42	860.2	0.4721	1.35480	0.0000446	58.95	0.003	0.0196
FS5	TEGV.Fl_O	59.91	6.515	1234.67	-132.77	0.0161	208.47	5.617	1187.48	860.2	0.4721	1.35480	0.0000446	58.95	0.003	0.0196
FS8	Core_Nozz.Fl_O	59.91	6.515	1234.81	-132.77	0.0161	208.48	3.477	1045.35	613.4	1.0000	1.35479	0.0000446	58.95	0.003	0.0196
FS17	FanDuctLkg.Fl_O	319.79	6.911	532.08	-3.13	0.0000	688.70	5.737	504.50	2606.7	0.5226	1.40004	0.0000295	319.78	0.009	0.0000
FS171	Bleed15.Fl_O	319.79	6.911	532.08	-3.13	0.0000	688.70	5.575	500.38	2481.9	0.5625	1.40004	0.0000295	319.78	0.009	0.0000
FS172	FanDuct.Fl_O	319.79	6.911	532.08	-3.13	0.0000	688.70	5.575	500.38	2481.9	0.5625	1.40004	0.0000295	319.78	0.009	0.0000
FS173	Byp_Nozz.Fl_O	319.79	6.911	532.08	-3.13	0.0000	688.70	3.650	443.27	2006.9	1.0000	1.40004	0.0000295	319.78	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1035.23	1.621	0.9117	3968.841	1.1624	0.9175	-8063.8	53.03	26.46
LPC	190.85	2.422	0.8520	3968.841	1.3375	0.8691	-3092.8	2.96	2.16
HPC	91.13	12.076	0.8607	10180.126	2.1574	0.8986	-14325.3	29.83	28.82
HPT	12.10	4.293	0.9099	215.008	1.3534	0.8903	14325.2		
LPT	55.99	4.357	0.9131	89.636	1.3983	0.8961	11156.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1202.83	1.606	0.9135	3930.998	0.0611	0.8607	1.0235	0.9980	0.9905
LPC	151.27	2.560	0.8233	1.048	0.0000	1.2615	0.9115	1.0349	0.0003
HPC	82.88	11.554	0.8696	9908.731	13.1468	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.202	0.9099	1.292	4.2020	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.525	0.9199	1.008	3.5247	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3738.47	9095.2
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4721	860.21
FanDuct	0.0000	0.5625	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4244	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11060.9	6802.1	14325.2
LP_Shaft	3728.4	15716.1	11156.8

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.1695	973.43	104.06	28.387
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.6898	973.43	104.06	6.515
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	937.86	95.26	35.501
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1156.04	149.82	81.267
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	937.86	95.26	35.501
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1320.99	192.07	124.744
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	937.86	95.26	35.501

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	612.30	16.05	10.330
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	6.7314	1320.99	192.07	121.871
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	5.8901	1320.99	192.07	68.398
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1320.99	192.07	124.744
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1320.99	192.07	124.744
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1320.99	192.07	124.744
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	532.08	-3.13	6.911
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	532.08	-3.13	6.911
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	532.08	-3.13	6.911
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	532.08	-3.13	6.911

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2646.48	0.9995	0.0230	0.95117	0.02188

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.283	0.9816	1.0000	0.9800	613.40	1.000	1534.8	3240.0
Byp_Nozz	2.422	0.9814	1.0000	0.9800	2006.86	1.000	1011.8	11654.2

```
**********************************************************************************************************************************
Date:07/05/13    Time:09:49:07    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 19/ 33/ 1/17    Run by: Philip C Jorgenson      PC:    79
Temperature Stator 1 inlet: 451.80    Stator 1 exit: 468.53    Stator 2 inlet: 488.56    Stator 2 exit: 496.59
            Stator 3 inlet: 521.23    Stator 3 exit: 529.40    Stator 4 inlet: 552.71    Stator 4 exit: 560.26
            Stator 5 inlet: 578.74    Stator 5 exit: 585.91            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.88
Fan Bypass Relative Humidity       0.20
LPC Inlet Relative Humidity        1.93
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          772.64    Fan/LPC Inlet Flow Velocity        433.45
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.78
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   442.08
Additional Water at LPC Exit   0.0000152
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	373.42	5507.4	0.5896	3247.42	5.4794	772.64	28.311	1.439	79.800	2598.7	2441.7	1690.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	373.42	4.267	457.74	-20.96	0.0000	1208.26	2.854	407.97	3686.0	0.7800	1.40084	0.0000295	373.41	0.011	0.0000
FS1	Inlet.Fl_O	373.42	4.267	457.74	-20.96	0.0000	1208.26	3.335	426.59	4168.2	0.6035	1.40084	0.0000295	373.41	0.011	0.0000
FS12	Splitter.Fl_02	315.79	4.265	457.74	-20.96	0.0000	1022.29	3.338	426.73	3531.8	0.6021	1.40084	0.0000295	315.78	0.009	0.0000
FS2	Splitter.Fl_01	57.63	4.265	457.74	-20.96	0.0000	186.57	3.776	442.08	830.5	0.4204	1.40084	0.0000295	57.63	0.002	0.0000
FS14	Fan.Fl_O	315.79	6.810	529.66	-3.71	0.0000	688.70	5.653	502.21	2606.7	0.5226	1.40008	0.0000295	315.78	0.009	0.0000
FS23	LPC.Fl_O	57.63	10.277	610.10	15.61	0.0000	89.38	9.195	591.05	412.6	0.4020	1.39857	0.0000295	57.63	0.002	0.0000
FS24	VaporIN.Fl_O	57.63	10.277	610.17	15.54	0.0000	89.39	9.195	591.11	412.6	0.4021	1.39856	0.0000447	57.63	0.003	0.0000
FS25	Bleed2.Fl_O	57.63	10.277	610.17	15.54	0.0000	89.39	9.195	591.11	412.6	0.4021	1.39856	0.0000447	57.63	0.003	0.0000
FS3	HPC.Fl_O	54.84	120.798	1306.06	188.21	0.0000	10.59	108.499	1269.28	49.7	0.3997	1.36150	0.0000447	54.84	0.002	0.0000
FS36	Bleed3.Fl_O	42.50	120.798	1306.06	188.21	0.0000	8.20	113.667	1285.12	49.3	0.3001	1.36150	0.0000447	42.50	0.002	0.0000
FS4	Burner.Fl_O	43.40	118.016	2598.73	162.16	0.0212	12.10	111.473	2565.04	74.6	0.2992	1.29291	0.0000447	42.50	0.002	0.0257
FS45	HPT.Fl_O	57.86	27.464	1698.23	-2.31	0.0158	56.02	24.720	1654.42	265.4	0.4003	1.32917	0.0000447	56.96	0.003	0.0193
FS49	LPT.Fl_O	58.53	6.302	1210.63	-130.14	0.0157	208.55	5.432	1164.15	860.2	0.4720	1.35663	0.0000447	57.63	0.003	0.0191
FS5	TEGV.Fl_O	58.53	6.302	1210.70	-130.14	0.0157	208.55	5.432	1164.21	860.2	0.4720	1.35663	0.0000447	57.63	0.003	0.0191
FS8	Core_Nozz.Fl_O	58.53	6.302	1210.83	-130.14	0.0157	208.56	3.361	1024.30	613.4	1.0000	1.35662	0.0000447	57.63	0.003	0.0191
FS17	FanDuctLkg.Fl_O	315.79	6.810	529.66	-3.71	0.0000	688.70	5.653	502.21	2606.7	0.5226	1.40008	0.0000295	315.78	0.009	0.0000
FS171	Bleed15.Fl_O	315.79	6.810	529.66	-3.71	0.0000	688.70	5.493	498.11	2481.9	0.5625	1.40008	0.0000295	315.78	0.009	0.0000
FS172	FanDuct.Fl_O	315.79	6.810	529.66	-3.71	0.0000	688.70	5.493	498.11	2481.9	0.5625	1.40008	0.0000295	315.78	0.009	0.0000
FS173	Byp_Nozz.Fl_O	315.79	6.810	529.66	-3.71	0.0000	688.70	3.596	441.26	2006.9	1.0000	1.40008	0.0000295	315.78	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1022.29	1.597	0.9114	3920.781	1.1571	0.9170	-7703.9	57.15	27.51
LPC	186.57	2.410	0.8583	3920.781	1.3329	0.8746	-2981.7	3.34	2.63
HPC	89.39	11.754	0.8613	10131.674	2.1405	0.8988	-13738.2	31.10	29.98
HPT	12.10	4.297	0.9091	215.566	1.3551	0.8897	13738.2		
LPT	56.02	4.358	0.9123	89.380	1.3998	0.8952	10685.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1187.80	1.583	0.9132	3883.397	0.0603	0.8607	1.0235	0.9980	0.9905
LPC	148.17	2.511	0.8223	1.036	0.0000	1.2591	0.9332	1.0438	0.0003
HPC	81.30	11.247	0.8702	9861.570	13.0377	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.206	0.9090	1.296	4.2057	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.526	0.9191	1.005	3.5257	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3685.99	8967.5
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4720	860.21
FanDuct	0.0000	0.5625	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4794	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10989.1	6566.0	13738.2
LP_Shaft	3683.3	15236.7	10685.5

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.1209	964.61	101.87	27.464
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6743	964.61	101.87	6.302
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	929.68	93.24	34.592
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1143.97	146.77	78.800
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	929.68	93.24	34.592
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1306.06	188.21	120.798
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	929.68	93.24	34.592

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	610.17	15.54	10.277
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.5805	1306.06	188.21	118.016
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.7581	1306.06	188.21	66.220
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1306.06	188.21	120.798
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1306.06	188.21	120.798
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1306.06	188.21	120.798
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	529.66	-3.71	6.810
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	529.66	-3.71	6.810
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	529.66	-3.71	6.810
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	529.66	-3.71	6.810

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2598.71	0.9995	0.0230	0.90206	0.02123

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.208	0.9816	1.0000	0.9800	613.40	1.000	1520.2	3077.0
Byp_Nozz	2.386	0.9815	1.0000	0.9800	2006.86	1.000	1009.5	11397.9

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*******************************************************************************************************************************************
Date:07/05/13    Time:09:49:42    Model:                                  Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 18/ 32/ 1/16    Run by: Philip C Jorgenson      PC:    76
Temperature Stator 1 inlet: 452.89    Stator 1 exit: 469.36    Stator 2 inlet: 489.19    Stator 2 exit: 497.30
            Stator 3 inlet: 521.41    Stator 3 exit: 529.59    Stator 4 inlet: 552.40    Stator 4 exit: 559.93
            Stator 5 inlet: 578.07    Stator 5 exit: 585.21             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity        10.00
Fan Face Relative Humidity        3.72
Fan Bypass Relative Humidity      0.21
LPC Inlet Relative Humidity       1.88
LPC Exit Relative Humidity        0.02
HPC Relative Humidity             0.00
Drop Diameter                0.0001000    Inlet Length                          40.00
Ambient Flow Velocity           772.64    Fan/LPC Inlet Flow Velocity          424.81
Ambient Static Pressure           2.85    Fan/LPC Inlet Static Pressure          3.79
Ambient Static Temperature      407.97    Fan/LPC Inlet Static Temperature     442.70
Additional Water at LPC Exit    0.0000152
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	369.50	5300.3	0.5901	3127.54	5.5191	772.64	27.662	1.398	76.800	2566.3	2411.8	1668.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	369.50	4.267	457.74	-20.96	0.0000	1195.58	2.854	407.97	3647.3	0.7800	1.40084	0.0000295	369.49	0.011	0.0000
FS1	Inlet.Fl_O	369.50	4.267	457.74	-20.96	0.0000	1195.58	3.363	427.60	4168.2	0.5930	1.40084	0.0000295	369.49	0.011	0.0000
FS12	Splitter.Fl_02	312.82	4.265	457.74	-20.96	0.0000	1012.69	3.362	427.63	3531.8	0.5927	1.40084	0.0000295	312.82	0.009	0.0000
FS2	Splitter.Fl_01	56.68	4.265	457.74	-20.96	0.0000	183.49	3.795	442.70	830.5	0.4117	1.40084	0.0000295	56.68	0.002	0.0000
FS14	Fan.Fl_O	312.82	6.735	528.01	-4.11	0.0000	688.70	5.591	500.64	2606.7	0.5226	1.40010	0.0000295	312.82	0.009	0.0000
FS23	LPC.Fl_O	56.68	10.238	608.70	15.27	0.0000	88.14	9.194	590.31	412.6	0.3952	1.39860	0.0000295	56.68	0.002	0.0000
FS24	VaporIN.Fl_O	56.68	10.238	608.77	15.20	0.0000	88.15	9.194	590.37	412.6	0.3952	1.39859	0.0000447	56.68	0.003	0.0000
FS25	Bleed2.Fl_O	56.68	10.238	608.77	15.20	0.0000	88.15	9.194	590.37	412.6	0.3952	1.39859	0.0000447	56.68	0.003	0.0000
FS3	HPC.Fl_O	53.93	118.027	1295.99	185.60	0.0000	10.61	105.935	1259.20	49.7	0.4009	1.36211	0.0000447	53.93	0.002	0.0000
FS36	Bleed3.Fl_O	41.80	118.027	1295.99	185.60	0.0000	8.23	111.018	1275.04	49.3	0.3009	1.36211	0.0000447	41.80	0.002	0.0000
FS4	Burner.Fl_O	42.67	115.309	2566.34	160.16	0.0208	12.10	108.914	2532.97	74.6	0.2990	1.29415	0.0000447	41.80	0.002	0.0251
FS45	HPT.Fl_O	56.89	26.818	1676.63	-2.27	0.0155	56.05	24.137	1633.22	265.4	0.4003	1.33042	0.0000447	56.02	0.003	0.0189
FS49	LPT.Fl_O	57.55	6.153	1194.46	-128.35	0.0153	208.60	5.303	1148.47	860.2	0.4719	1.35787	0.0000447	56.68	0.003	0.0187
FS5	TEGV.Fl_O	57.55	6.153	1194.53	-128.35	0.0153	208.61	5.303	1148.53	860.2	0.4719	1.35787	0.0000447	56.68	0.003	0.0187
FS8	Core_Nozz.Fl_O	57.55	6.153	1194.67	-128.35	0.0153	208.62	3.281	1010.12	613.4	1.0000	1.35786	0.0000447	56.68	0.003	0.0187
FS17	FanDuctLkg.Fl_O	312.82	6.735	528.01	-4.11	0.0000	688.70	5.591	500.64	2606.7	0.5226	1.40010	0.0000295	312.82	0.009	0.0000
FS171	Bleed15.Fl_O	312.82	6.735	528.01	-4.11	0.0000	688.70	5.433	496.56	2481.9	0.5625	1.40010	0.0000295	312.82	0.009	0.0000
FS172	FanDuct.Fl_O	312.82	6.735	528.01	-4.11	0.0000	688.70	5.433	496.56	2481.9	0.5625	1.40010	0.0000295	312.82	0.009	0.0000
FS173	Byp_Nozz.Fl_O	312.82	6.735	528.01	-4.11	0.0000	688.70	3.557	439.88	2006.9	1.0000	1.40010	0.0000295	312.82	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1012.69	1.579	0.9094	3888.072	1.1535	0.9150	-7456.5	59.29	28.29
LPC	183.49	2.401	0.8620	3888.072	1.3298	0.8778	-2905.4	3.61	2.87
HPC	88.15	11.528	0.8614	10098.219	2.1289	0.8986	-13334.0	32.00	30.80
HPT	12.10	4.300	0.9085	215.957	1.3562	0.8892	13334.0		
LPT	56.05	4.359	0.9118	89.203	1.4008	0.8945	10361.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1176.64	1.566	0.9112	3850.999	0.0597	0.8607	1.0235	0.9980	0.9905
LPC	146.06	2.477	0.8217	1.027	0.0000	1.2562	0.9482	1.0491	0.0003
HPC	80.17	11.032	0.8703	9829.008	12.9619	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.208	0.9085	1.298	4.2082	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.526	0.9185	1.003	3.5263	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3647.32	8873.4
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4719	860.21
FanDuct	0.0000	0.5625	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5191	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	10940.2	6401.3	13334.0
LP_Shaft	3652.6	14899.5	10361.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.0859	958.67	100.40	26.818
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6632	958.67	100.40	6.153
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	924.17	91.88	33.952
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1135.83	144.71	77.067
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	924.17	91.88	33.952
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1295.99	185.60	118.027
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	924.17	91.88	33.952

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	608.77	15.20	10.238
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.4718	1295.99	185.60	115.309
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.6630	1295.99	185.60	64.692
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1295.99	185.60	118.027
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1295.99	185.60	118.027
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1295.99	185.60	118.027
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	528.01	-4.11	6.735
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	528.01	-4.11	6.735
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	528.01	-4.11	6.735
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	528.01	-4.11	6.735

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2566.32	0.9995	0.0230	0.86876	0.02079

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.156	0.9815	1.0000	0.9800	613.40	1.000	1510.2	2963.1
Byp_Nozz	2.360	0.9815	1.0000	0.9800	2006.86	1.000	1007.9	11210.6

100µm, ISA +36R

```
**********************************************************************************************************************************
Date:07/05/13    Time:09:59:54    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 24/ 38/ 1/22    Run by: Philip C Jorgenson      PC:   100
Temperature Stator 1 inlet: 463.71    Stator 1 exit: 483.17    Stator 2 inlet: 505.69    Stator 2 exit: 513.14
            Stator 3 inlet: 543.36    Stator 3 exit: 551.66    Stator 4 inlet: 579.93    Stator 4 exit: 587.99
            Stator 5 inlet: 609.83    Stator 5 exit: 617.71            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.44
Fan Bypass Relative Humidity       0.19
LPC Inlet Relative Humidity        2.52
LPC Exit Relative Humidity         0.02
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        495.72
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.66
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   457.44
Additional Water at LPC Exit   0.0000037
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	387.85	6803.7	0.6132	4171.96	5.2836	789.49	32.273	1.709	100.000	2922.5	2743.5	1912.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	387.85	4.267	477.92	-16.44	0.0000	1282.33	2.854	425.97	3912.1	0.7800	1.40068	0.0000851	387.82	0.033	0.0001
FS1	Inlet.Fl_O	387.85	4.267	477.92	-16.44	0.0000	1282.33	3.150	438.17	4168.2	0.6727	1.40068	0.0000851	387.82	0.033	0.0001
FS12	Splitter.Fl_02	326.13	4.265	477.92	-16.44	0.0000	1078.79	3.174	439.19	3531.8	0.6634	1.40068	0.0000851	326.10	0.028	0.0001
FS2	Splitter.Fl_01	61.72	4.265	477.92	-16.44	0.0000	204.18	3.659	457.44	830.5	0.4726	1.40068	0.0000851	61.72	0.005	0.0001
FS14	Fan.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	6.025	534.77	2606.7	0.5227	1.39952	0.0000851	326.10	0.028	0.0001
FS23	LPC.Fl_O	61.72	10.478	647.73	24.35	0.0000	96.75	9.151	623.23	412.6	0.4444	1.39757	0.0000851	61.72	0.005	0.0001
FS24	VaporIN.Fl_O	61.72	10.478	647.80	24.35	0.0000	96.75	9.150	623.29	412.6	0.4444	1.39757	0.0000888	61.72	0.005	0.0001
FS25	Bleed2.Fl_O	61.72	10.478	647.80	24.35	0.0000	96.75	9.150	623.29	412.6	0.4444	1.39757	0.0000888	61.72	0.005	0.0001
FS3	HPC.Fl_O	58.73	137.698	1427.61	219.58	0.0000	10.40	124.228	1389.59	49.7	0.3922	1.35438	0.0000888	58.73	0.005	0.0001
FS36	Bleed3.Fl_O	45.52	137.698	1427.61	219.58	0.0000	8.06	129.872	1405.91	49.3	0.2950	1.35438	0.0000888	45.51	0.004	0.0001
FS4	Burner.Fl_O	46.67	134.527	2922.48	187.34	0.0255	12.10	127.105	2885.75	74.6	0.3007	1.28096	0.0000888	45.51	0.004	0.0307
FS45	HPT.Fl_O	62.16	31.490	1921.38	2.65	0.0190	55.83	28.370	1873.53	265.4	0.4005	1.31732	0.0000888	61.00	0.005	0.0231
FS49	LPT.Fl_O	62.88	7.250	1379.95	-143.09	0.0188	207.90	6.256	1328.62	860.2	0.4725	1.34413	0.0000888	61.72	0.005	0.0228
FS5	TEGV.Fl_O	62.88	7.250	1380.01	-143.09	0.0188	207.91	6.256	1328.69	860.2	0.4725	1.34413	0.0000888	61.72	0.005	0.0228
FS8	Core_Nozz.Fl_O	62.88	7.250	1380.14	-143.09	0.0188	207.92	3.882	1173.55	613.4	1.0000	1.34412	0.0000888	61.72	0.005	0.0228
FS17	FanDuctLkg.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	6.025	534.77	2606.7	0.5227	1.39952	0.0000851	326.10	0.028	0.0001
FS171	Bleed15.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	5.854	530.41	2481.9	0.5626	1.39952	0.0000851	326.10	0.028	0.0001
FS172	FanDuct.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	5.854	530.41	2481.9	0.5626	1.39952	0.0000851	326.10	0.028	0.0001
FS173	Byp_Nozz.Fl_O	326.13	7.257	563.97	4.20	0.0000	688.63	3.833	469.91	2006.9	1.0000	1.39952	0.0000851	326.10	0.028	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1078.79	1.702	0.9114	4139.469	1.1801	0.9178	-9525.9	36.68	23.09
LPC	204.18	2.457	0.8233	4139.469	1.3553	0.8440	-3562.4	2.97	2.24
HPC	96.75	13.142	0.8585	10363.857	2.2038	0.8978	-16636.5	26.01	25.23
HPT	12.10	4.272	0.9122	214.249	1.3428	0.8903	16636.5		
LPT	55.83	4.343	0.9167	90.651	1.3888	0.9005	13088.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1253.45	1.686	0.9132	4100.000	0.0639	0.8607	1.0235	0.9980	0.9905
LPC	166.84	2.748	0.8341	1.093	0.0000	1.2238	0.8335	0.9870	0.0003
HPC	88.00	12.570	0.8673	10087.563	13.4980	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.181	0.9122	1.288	4.1813	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.515	0.9235	1.020	3.5146	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3912.13	9517.1

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4725	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.2836	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11582.3	7544.0	16636.5
LP_Shaft	3973.5	17299.9	13088.4

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	2.2714	1046.36	121.96	31.490
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.7222	1046.36	121.96	7.250
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1007.23	112.20	38.466
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	1246.86	172.73	89.354
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1007.23	112.20	38.466
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1427.61	219.58	137.698
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	1007.23	112.20	38.466

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.0000	1.0000	1.0000	0.0000	647.80	24.35	10.478
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	7.0477	1427.61	219.58	134.527
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	6.1669	1427.61	219.58	75.590
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1427.61	219.58	137.698
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1427.61	219.58	137.698
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1427.61	219.58	137.698
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	563.97	4.20	7.257

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2922.48	0.9995	0.0230	1.15888	0.02546

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.540	0.9809	1.0000	0.9800	613.40	1.000	1620.1	3797.1
Byp_Nozz	2.543	0.9810	1.0000	0.9800	2006.86	1.000	1041.7	12523.7

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Date:07/05/13 Time:10:00:50 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 25/ 53/ 2/22 Run by: Philip C Jorgenson PC: 84
Temperature Stator 1 inlet: 469.59 Stator 1 exit: 487.62 Stator 2 inlet: 508.97 Stator 2 exit: 517.19
Stator 3 inlet: 544.04 Stator 3 exit: 552.56 Stator 4 inlet: 577.92 Stator 4 exit: 585.86
Stator 5 inlet: 605.83 Stator 5 exit: 613.44 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	4.44		
Fan Bypass Relative Humidity	0.23		
LPC Inlet Relative Humidity	2.25		
LPC Exit Relative Humidity	0.03		
HPC Relative Humidity	0.00		
Drop Diameter	0.0001000	Inlet Length	40.00
Ambient Flow Velocity	789.49	Fan/LPC Inlet Flow Velocity	458.61
Ambient Static Pressure	2.85	Fan/LPC Inlet Static Pressure	3.74
Ambient Static Temperature	425.97	Fan/LPC Inlet Static Temperature	460.39
Additional Water at LPC Exit	0.0000041		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	372.15	5891.0	0.6059	3569.31	5.4133	789.49	29.445	1.518	84.000	2762.8	2595.7	1803.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	372.15	4.267	477.92	-16.44	0.0000	1230.41	2.854	425.97	3753.7	0.7800	1.40068	0.0000851	372.11	0.032	0.0001
FS1	Inlet.Fl_O	372.15	4.267	477.92	-16.44	0.0000	1230.41	3.284	443.45	4168.2	0.6228	1.40068	0.0000851	372.11	0.032	0.0001
FS12	Splitter.Fl_02	314.12	4.265	477.92	-16.44	0.0000	1039.08	3.292	443.82	3531.8	0.6192	1.40068	0.0000851	314.09	0.027	0.0001
FS2	Splitter.Fl_01	58.03	4.265	477.92	-16.44	0.0000	191.95	3.743	460.39	830.5	0.4359	1.40068	0.0000851	58.02	0.005	0.0001
FS14	Fan.Fl_O	314.12	6.942	556.22	2.34	0.0000	688.65	5.763	527.41	2606.7	0.5226	1.39966	0.0000851	314.09	0.027	0.0001
FS23	LPC.Fl_O	58.03	10.354	639.92	22.47	0.0000	91.48	9.204	618.81	412.6	0.4139	1.39779	0.0000851	58.02	0.005	0.0001
FS24	VaporIN.Fl_O	58.03	10.354	639.98	22.46	0.0000	91.48	9.204	618.88	412.6	0.4139	1.39779	0.0000891	58.02	0.005	0.0001
FS25	Bleed2.Fl_O	58.03	10.354	639.98	22.46	0.0000	91.48	9.204	618.88	412.6	0.4139	1.39779	0.0000891	58.02	0.005	0.0001
FS3	HPC.Fl_O	55.21	125.632	1378.37	206.71	0.0000	10.53	112.995	1340.35	49.7	0.3977	1.35719	0.0000891	55.21	0.005	0.0001
FS36	Bleed3.Fl_O	42.79	125.632	1378.37	206.71	0.0000	8.16	118.301	1356.70	49.3	0.2987	1.35719	0.0000891	42.79	0.004	0.0001
FS4	Burner.Fl_O	43.78	122.739	2762.79	177.76	0.0232	12.10	115.950	2727.52	74.6	0.2999	1.28688	0.0000891	42.79	0.004	0.0280
FS45	HPT.Fl_O	58.34	28.642	1812.31	2.80	0.0173	55.95	25.791	1766.36	265.4	0.4006	1.32302	0.0000891	57.34	0.005	0.0210
FS49	LPT.Fl_O	59.02	6.587	1297.04	-134.14	0.0171	208.22	5.681	1248.02	860.2	0.4723	1.35025	0.0000891	58.02	0.005	0.0208
FS5	TEGV.Fl_O	59.02	6.587	1297.10	-134.14	0.0171	208.23	5.681	1248.09	860.2	0.4723	1.35025	0.0000891	58.02	0.005	0.0208
FS8	Core_Nozz.Fl_O	59.02	6.587	1297.23	-134.14	0.0171	208.24	3.520	1100.23	613.4	1.0000	1.35024	0.0000891	58.02	0.005	0.0208
FS17	FanDuctLkg.Fl_O	314.12	6.942	556.22	2.34	0.0000	688.65	5.763	527.41	2606.7	0.5226	1.39966	0.0000851	314.09	0.027	0.0001
FS171	Bleed15.Fl_O	314.12	6.942	556.22	2.34	0.0000	688.65	5.600	523.11	2481.9	0.5626	1.39966	0.0000851	314.09	0.027	0.0001
FS172	FanDuct.Fl_O	314.12	6.942	556.22	2.34	0.0000	688.65	5.600	523.11	2481.9	0.5626	1.39966	0.0000851	314.09	0.027	0.0001
FS173	Byp_Nozz.Fl_O	314.12	6.942	556.22	2.34	0.0000	688.65	3.666	463.43	2006.9	1.0000	1.39966	0.0000851	314.09	0.027	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1039.08	1.628	0.9120	3982.695	1.1638	0.9179	-8347.4	51.73	26.15
LPC	191.95	2.428	0.8502	3982.695	1.3390	0.8676	-3194.5	2.91	2.10
HPC	91.48	12.133	0.8606	10189.614	2.1538	0.8985	-14760.0	29.68	28.68
HPT	12.10	4.285	0.9109	215.339	1.3490	0.8905	14760.0		
LPT	55.95	4.348	0.9147	89.803	1.3941	0.8982	11542.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1207.30	1.613	0.9139	3944.720	0.0614	0.8607	1.0235	0.9980	0.9905
LPC	152.37	2.575	0.8239	1.052	0.0000	1.2597	0.9066	1.0320	0.0003
HPC	83.20	11.609	0.8695	9917.965	13.1591	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.194	0.9109	1.294	4.1942	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.518	0.9215	1.010	3.5183	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3753.73	9131.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4723	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4133	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11318.7	6848.9	14760.0
LP_Shaft	3823.0	15856.4	11542.0

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.1354	1016.81	114.59	28.642
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6789	1016.81	114.59	6.587
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	979.75	105.37	35.715
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1206.85	162.49	81.826
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	979.75	105.37	35.715
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1378.37	206.71	125.632
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	979.75	105.37	35.715

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	639.98	22.46	10.354
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.6255	1378.37	206.71	122.739
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.7975	1378.37	206.71	68.916
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1378.37	206.71	125.632
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1378.37	206.71	125.632
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1378.37	206.71	125.632
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	556.22	2.34	6.942
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	556.22	2.34	6.942
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	556.22	2.34	6.942
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	556.22	2.34	6.942

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2762.79	0.9995	0.0230	0.99147	0.02317

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.308	0.9816	1.0000	0.9800	613.40	1.000	1572.1	3292.5
Byp_Nozz	2.432	0.9814	1.0000	0.9800	2006.86	1.000	1034.5	11730.2

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**********************************************************************************************************************************
Date:07/05/13    Time:10:01:41    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 21/ 49/ 2/18    Run by: Philip C Jorgenson      PC:    79
Temperature Stator 1 inlet: 471.31    Stator 1 exit: 488.90    Stator 2 inlet: 509.91    Stator 2 exit: 518.28
            Stator 3 inlet: 544.23    Stator 3 exit: 552.77    Stator 4 inlet: 577.30    Stator 4 exit: 585.21
            Stator 5 inlet: 604.64    Stator 5 exit: 612.16            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.19
Fan Bypass Relative Humidity       0.25
LPC Inlet Relative Humidity        2.16
LPC Exit Relative Humidity         0.03
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        446.09
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        3.77
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   461.34
Additional Water at LPC Exit   0.0000042
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	366.89	5594.4	0.6047	3382.79	5.4671	789.49	28.508	1.457	79.800	2712.2	2548.9	1770.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	366.89	4.267	477.92	-16.44	0.0000	1213.03	2.854	425.97	3700.7	0.7800	1.40068	0.0000851	366.86	0.031	0.0001
FS1	Inlet.Fl_O	366.89	4.267	477.92	-16.44	0.0000	1213.03	3.325	444.99	4168.2	0.6076	1.40068	0.0000851	366.86	0.031	0.0001
FS12	Splitter.Fl_02	310.16	4.265	477.92	-16.44	0.0000	1025.97	3.328	445.18	3531.8	0.6058	1.40068	0.0000851	310.13	0.026	0.0001
FS2	Splitter.Fl_01	56.73	4.265	477.92	-16.44	0.0000	187.66	3.769	461.34	830.5	0.4235	1.40068	0.0000851	56.73	0.005	0.0001
FS14	Fan.Fl_O	310.16	6.838	553.67	1.73	0.0000	688.65	5.677	524.99	2606.7	0.5226	1.39970	0.0000851	310.13	0.026	0.0001
FS23	LPC.Fl_O	56.73	10.299	637.57	21.91	0.0000	89.75	9.204	617.49	412.6	0.4042	1.39785	0.0000851	56.73	0.005	0.0001
FS24	VaporIN.Fl_O	56.73	10.299	637.64	21.90	0.0000	89.76	9.204	617.55	412.6	0.4042	1.39785	0.0000893	56.73	0.005	0.0001
FS25	Bleed2.Fl_O	56.73	10.299	637.64	21.90	0.0000	89.76	9.204	617.55	412.6	0.4042	1.39785	0.0000893	56.73	0.005	0.0001
FS3	HPC.Fl_O	53.98	121.637	1362.67	202.62	0.0000	10.57	109.288	1324.66	49.7	0.3995	1.35810	0.0000893	53.98	0.005	0.0001
FS36	Bleed3.Fl_O	41.83	121.637	1362.67	202.62	0.0000	8.19	114.477	1341.01	49.3	0.3000	1.35810	0.0000893	41.83	0.004	0.0001
FS4	Burner.Fl_O	42.77	118.836	2712.15	174.67	0.0225	12.10	112.262	2677.37	74.6	0.2996	1.28879	0.0000893	41.83	0.004	0.0272
FS45	HPT.Fl_O	57.01	27.706	1778.19	2.85	0.0168	55.99	24.943	1732.85	265.4	0.4007	1.32487	0.0000893	56.06	0.005	0.0204
FS49	LPT.Fl_O	57.67	6.369	1271.25	-131.33	0.0166	208.32	5.492	1222.97	860.2	0.4722	1.35221	0.0000893	56.73	0.005	0.0202
FS5	TEGV.Fl_O	57.67	6.369	1271.31	-131.33	0.0166	208.32	5.492	1223.04	860.2	0.4722	1.35221	0.0000893	56.73	0.005	0.0202
FS8	Core_Nozz.Fl_O	57.67	6.369	1271.44	-131.33	0.0166	208.34	3.402	1077.50	613.4	1.0000	1.35220	0.0000893	56.73	0.005	0.0202
FS17	FanDuctLkg.Fl_O	310.16	6.838	553.67	1.73	0.0000	688.65	5.677	524.99	2606.7	0.5226	1.39970	0.0000851	310.13	0.026	0.0001
FS171	Bleed15.Fl_O	310.16	6.838	553.67	1.73	0.0000	688.65	5.516	520.71	2481.9	0.5626	1.39970	0.0000851	310.13	0.026	0.0001
FS172	FanDuct.Fl_O	310.16	6.838	553.67	1.73	0.0000	688.65	5.516	520.71	2481.9	0.5626	1.39970	0.0000851	310.13	0.026	0.0001
FS173	Byp_Nozz.Fl_O	310.16	6.838	553.67	1.73	0.0000	688.65	3.612	461.30	2006.9	1.0000	1.39970	0.0000851	310.13	0.026	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1025.97	1.604	0.9117	3933.623	1.1585	0.9174	-7973.6	56.33	27.21
LPC	187.66	2.415	0.8569	3933.623	1.3341	0.8733	-3077.9	3.24	2.50
HPC	89.76	11.811	0.8612	10141.517	2.1371	0.8987	-14154.7	30.96	29.86
HPT	12.10	4.289	0.9102	215.917	1.3509	0.8900	14154.7		
LPT	55.99	4.350	0.9140	89.544	1.3958	0.8973	11051.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1192.08	1.590	0.9136	3896.116	0.0605	0.8607	1.0235	0.9980	0.9905
LPC	149.00	2.524	0.8226	1.039	0.0000	1.2595	0.9285	1.0417	0.0003
HPC	81.63	11.301	0.8701	9871.151	13.0487	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.198	0.9102	1.298	4.1981	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.519	0.9208	1.007	3.5195	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3700.70	9002.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4722	860.21
FanDuct	0.0000	0.5626	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.4671	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11244.6	6611.3	14154.7
LP_Shaft	3775.9	15372.0	11051.5

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.0877	1007.47	112.26	27.706
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6638	1007.47	112.26	6.369
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	971.08	103.22	34.793
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1194.13	159.25	79.329
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	971.08	103.22	34.793
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	1362.67	202.62	121.637
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	971.08	103.22	34.793

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	637.64	21.90	10.299
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.4776	1362.67	202.62	118.836
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.6681	1362.67	202.62	66.709
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1362.67	202.62	121.637
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1362.67	202.62	121.637
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1362.67	202.62	121.637
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	553.67	1.73	6.838
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	553.67	1.73	6.838
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	553.67	1.73	6.838
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	553.67	1.73	6.838

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2712.14	0.9995	0.0230	0.93966	0.02246

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.232	0.9816	1.0000	0.9800	613.40	1.000	1556.9	3126.7
Byp_Nozz	2.396	0.9814	1.0000	0.9800	2006.86	1.000	1032.2	11470.4

```
*****************************************************************************************************************************
Date:07/05/13    Time:10:02:15    Model:                                        Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 19/ 33/ 1/17    Run by: Philip C Jorgenson      PC:    76
Temperature Stator 1 inlet: 472.50    Stator 1 exit: 489.80    Stator 2 inlet: 510.61    Stator 2 exit: 519.07
            Stator 3 inlet: 544.45    Stator 3 exit: 553.00    Stator 4 inlet: 577.00    Stator 4 exit: 584.89
            Stator 5 inlet: 603.96    Stator 5 exit: 611.44             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity        10.00
Fan Face Relative Humidity        4.03
Fan Bypass Relative Humidity      0.26
LPC Inlet Relative Humidity       2.11
LPC Exit Relative Humidity        0.03
HPC Relative Humidity             0.00
Drop Diameter                0.0001000    Inlet Length                          40.00
Ambient Flow Velocity           789.49    Fan/LPC Inlet Flow Velocity          437.12
Ambient Static Pressure           2.85    Fan/LPC Inlet Static Pressure          3.79
Ambient Static Temperature      425.97    Fan/LPC Inlet Static Temperature     462.00
Additional Water at LPC Exit     0.0000043
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	363.05	5383.6	0.6046	3254.95	5.5075	789.49	27.846	1.415	76.800	2677.4	2516.8	1746.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	363.05	4.267	477.92	-16.44	0.0000	1200.33	2.854	425.97	3662.0	0.7800	1.40068	0.0000851	363.02	0.031	0.0001
FS1	Inlet.Fl_O	363.05	4.267	477.92	-16.44	0.0000	1200.33	3.353	446.06	4168.2	0.5970	1.40068	0.0000851	363.02	0.031	0.0001
FS12	Splitter.Fl_02	307.26	4.265	477.92	-16.44	0.0000	1016.39	3.353	446.13	3531.8	0.5963	1.40068	0.0000851	307.23	0.026	0.0001
FS2	Splitter.Fl_01	55.79	4.265	477.92	-16.44	0.0000	184.55	3.788	462.00	830.5	0.4147	1.40068	0.0000851	55.78	0.005	0.0001
FS14	Fan.Fl_O	307.26	6.764	551.89	1.30	0.0000	688.66	5.615	523.30	2606.7	0.5226	1.39973	0.0000851	307.23	0.026	0.0001
FS23	LPC.Fl_O	55.79	10.262	636.11	21.55	0.0000	88.48	9.206	616.74	412.6	0.3972	1.39789	0.0000851	55.78	0.005	0.0001
FS24	VaporIN.Fl_O	55.79	10.262	636.18	21.54	0.0000	88.48	9.206	616.80	412.6	0.3972	1.39789	0.0000894	55.78	0.005	0.0001
FS25	Bleed2.Fl_O	55.79	10.262	636.18	21.54	0.0000	88.48	9.206	616.80	412.6	0.3972	1.39789	0.0000894	55.78	0.005	0.0001
FS3	HPC.Fl_O	53.08	118.809	1351.95	199.84	0.0000	10.60	106.670	1313.93	49.7	0.4008	1.35874	0.0000894	53.08	0.005	0.0001
FS36	Bleed3.Fl_O	41.14	118.809	1351.95	199.84	0.0000	8.22	111.773	1330.32	49.3	0.3008	1.35874	0.0000894	41.14	0.004	0.0001
FS4	Burner.Fl_O	42.04	116.073	2677.38	172.56	0.0220	12.09	109.650	2642.95	74.6	0.2994	1.29010	0.0000894	41.14	0.004	0.0266
FS45	HPT.Fl_O	56.04	27.046	1754.98	2.92	0.0164	56.01	24.346	1710.04	265.4	0.4007	1.32616	0.0000894	55.13	0.005	0.0200
FS49	LPT.Fl_O	56.69	6.216	1253.73	-129.39	0.0162	208.39	5.359	1205.96	860.2	0.4721	1.35355	0.0000894	55.78	0.005	0.0198
FS5	TEGV.Fl_O	56.69	6.216	1253.79	-129.39	0.0162	208.40	5.359	1206.02	860.2	0.4721	1.35355	0.0000894	55.78	0.005	0.0198
FS8	Core_Nozz.Fl_O	56.69	6.216	1253.93	-129.39	0.0162	208.41	3.319	1062.08	613.4	1.0000	1.35354	0.0000894	55.78	0.005	0.0198
FS17	FanDuctLkg.Fl_O	307.26	6.764	551.89	1.30	0.0000	688.66	5.615	523.30	2606.7	0.5226	1.39973	0.0000851	307.23	0.026	0.0001
FS171	Bleed15.Fl_O	307.26	6.764	551.89	1.30	0.0000	688.66	5.456	519.03	2481.9	0.5626	1.39973	0.0000851	307.23	0.026	0.0001
FS172	FanDuct.Fl_O	307.26	6.764	551.89	1.30	0.0000	688.66	5.456	519.03	2481.9	0.5626	1.39973	0.0000851	307.23	0.026	0.0001
FS173	Byp_Nozz.Fl_O	307.26	6.764	551.89	1.30	0.0000	688.66	3.572	459.81	2006.9	1.0000	1.39973	0.0000851	307.23	0.026	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	1016.39	1.586	0.9105	3900.420	1.1548	0.9162	-7712.9	58.47	27.99
LPC	184.55	2.406	0.8608	3900.420	1.3310	0.8768	-2999.0	3.51	2.79
HPC	88.48	11.578	0.8614	10106.860	2.1251	0.8986	-13732.3	31.89	30.71
HPT	12.09	4.292	0.9097	216.324	1.3520	0.8895	13732.3		
LPT	56.01	4.351	0.9135	89.373	1.3969	0.8967	10712.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	1180.94	1.573	0.9124	3863.230	0.0599	0.8607	1.0235	0.9980	0.9905
LPC	146.85	2.490	0.8219	1.030	0.0000	1.2567	0.9440	1.0473	0.0003
HPC	80.48	11.079	0.8703	9837.418	12.9699	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.201	0.9097	1.300	4.2005	12.6299	0.9723	1.0000	0.0003
LPT	0.86	3.520	0.9203	1.005	3.5204	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	3661.98	8908.5
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.4721	860.21
FanDuct	0.0000	0.5626	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	5.5075	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	11193.3	6443.4	13732.3
LP_Shaft	3744.1	15027.2	10712.4

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	2677.36	0.9995	0.0230	0.90415	0.02198

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	2.178	0.9815	1.0000	0.9800	613.40	1.000	1546.4	3009.9
Byp_Nozz	2.370	0.9815	1.0000	0.9800	2006.86	1.000	1030.5	11282.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	2.0531	1001.16	110.69	27.046
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.6527	1001.16	110.69	6.216
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	965.24	101.78	34.142
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	1185.49	157.05	77.561
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	965.24	101.78	34.142
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1351.95	199.84	118.809
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	965.24	101.78	34.142

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.0000	1.0000	1.0000	0.0000	636.18	21.54	10.262
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	6.3701	1351.95	199.84	116.073
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	5.5739	1351.95	199.84	65.149
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1351.95	199.84	118.809
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1351.95	199.84	118.809
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1351.95	199.84	118.809
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	551.89	1.30	6.764
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	551.89	1.30	6.764
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	551.89	1.30	6.764
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	551.89	1.30	6.764

Appendix J: Compressor code analysis for the altitude cruise conditions at 39000 feet

5µm, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.956   EfDer =  0.985    SH =  0.292440E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     62.868    3888.739       4.265     457.734       1.000       1.000       0.980
 W Kg/sec =  28.577  Wdry =  62.850  WH2O = 0.018  lbm/sec   H2O =   0.106g/m^3

    W cor      RPM cor        GAMMA       Cp          R          Blades       THK
    203.570    4139.589       1.381       0.248      53.358      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 167437.078   49323.992       1.395     831.557     595.936     619.754       1.040

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   483.25    -0.17   483.25     0.47     0.83   745.23
 MEAN    17.06     0.00    -0.02   483.25    -0.17   483.25     0.47     0.74
 HUB     12.51     0.00    -0.02   483.25    -0.17   483.25     0.47     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.39    50.47     4.92   700.09   850.82     3.66   438.96   450.26    21.85
 MEAN    50.16    47.20     2.96   578.95   754.26     3.66   438.96   450.26    21.85
 HUB     41.31    38.62     2.69   424.53   643.35     3.66   438.96   450.26    21.85

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   725.34   355.07   632.49  1039.22     0.70     7.29     6.52    16.04
 MEAN    18.04   770.25   412.46   650.51  1033.75     0.75     7.43     6.80    12.53
 HUB     15.00   909.83   579.46   701.45  1019.86     0.89     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    700.09   720.48   345.02     0.69  7328.55     0.92     0.90
 MEAN   612.06   680.44   199.60     0.66  7442.02     0.92     0.90      0.90     1.21
 HUB    509.03   704.97    70.42     0.69  8693.92     0.92     0.90

         Pt2       PR       Ps2     Tt2       TR       Ts2     TwetBulb2   RH
 TIP      5.61     1.32     4.07   497.72     1.09   455.42   477.79    14.31
 MEAN     5.64     1.32     3.91   498.34     1.09   450.64   479.08    17.36
 HUB      5.89     1.38     3.53   505.18     1.10   438.62   487.31    28.80

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.31    28.61    24.20     4.41     0.93     0.27     1.80
 MEAN    32.38    17.06    12.70     4.36     0.91     0.22     2.22
 HUB     39.56    -5.73    -9.30     3.57     0.91     0.07     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.985       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   832.1764   411.6610   723.2239  1026.9709     0.8103    -0.1062     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.6951     3.7149   444.7459   482.0695    22.8487    29.6486    35.4000     5.7514

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth       Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   676.2443   165.4300   655.6976  1048.5519     0.6449     0.2327     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.6362     4.2749   463.6583   478.4119   554.9116     0.0414     0.3622
```

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
18.0829	677.9093	0.0000	677.9093	1048.2969	0.6467	0.2581	1.3089

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.2261	463.4891	478.8769	0.0000	0.0600	0.0716	0.2067

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8253	5.5795	1.3083	500.4125	42.6805	237.2659	1.8393

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
265503.188	0.542	943.267	724249.813	0.494615E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.638 EfDer = 0.990 SH = 0.793530E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
62.868	3888.739	5.580	500.411	1.000	1.000	0.980

W Kg/sec = 28.577 Wdry = 62.819 WH2O = 0.050 lbm/sec H2O = 0.329g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
162.689	3959.158	1.380	0.249	53.374	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
146133.156	49314.289	1.239	590.487	476.414	468.502	0.983

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	593.93	-0.20	593.93	0.56	0.87	709.99
MEAN	18.08	0.00	-0.02	593.93	-0.20	593.93	0.56	0.81	
HUB	15.21	0.00	-0.02	593.93	-0.20	593.93	0.56	0.74	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.59	46.36	3.23	697.38	916.17	4.52	472.10	479.52	14.88
MEAN	45.94	42.30	3.64	613.50	854.04	4.52	472.10	479.52	14.88
HUB	41.00	37.84	3.16	516.16	787.01	4.52	472.10	479.52	14.88

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	645.13	277.74	582.28	1086.47	0.59	2.33	2.04	9.02
MEAN	18.01	664.85	302.33	592.13	1082.85	0.61	2.40	2.13	7.35
HUB	15.22	725.92	404.25	602.95	1079.61	0.67	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	692.97	715.16	415.22	0.66	5675.72	0.92	0.91		
MEAN	611.18	667.83	308.85	0.62	5448.72	0.92	0.91	0.91	1.38
HUB	516.60	613.32	112.36	0.57	6156.93	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.80	1.22	5.37	531.32	1.06	497.92	494.59	6.56
MEAN	6.75	1.21	5.25	530.09	1.06	494.62	494.35	7.31
HUB	6.91	1.24	5.12	533.95	1.07	491.66	496.95	8.03

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.50	35.49	31.50	3.99	0.93	0.33	1.40
MEAN	27.05	27.55	23.50	4.05	0.92	0.33	1.63
HUB	33.84	10.56	6.50	4.06	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.990	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	761.3764	303.1825	698.4085	1072.5337	0.7099	-0.2336	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.8025	4.8801	485.2846	496.9738	10.1668	23.4659	30.6000	7.1341

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	656.1975	139.1185	641.2809	1085.6792	0.6044	0.0294	2.4513

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.7543     5.2933   497.2445   494.9695   491.5697     0.0407     0.2262

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.8235   697.8997     0.0000   697.8997  1080.7042     0.6458     0.1055     0.5911

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.0830   492.7213   495.8897     0.0000     0.0600     0.0720    -0.1044

    STAGE EXIT CONDITIONS, STAGE            2
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8281     6.7051     1.2017   531.7853    31.3743   278.7588     2.1609

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 195584.266       0.407     694.862  654897.250   0.975334E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   3
  BLEED =  0.000   DPInc = 4.069   EfDer =  0.993    SH =  0.123737E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     62.868    3888.739       6.705     531.784       1.000       1.000       0.980
 W Kg/sec =  28.577  Wdry =  62.791  WH2O = 0.078  lbm/sec   H2O =   0.597g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    139.559    3840.597       1.380       0.249      53.388      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 125550.727   49305.676       1.334     545.479     408.813     424.468       1.038

ROTOR LEADING EDGE CONDITIONS, STAGE   3

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.07     0.00    -0.02   552.38    -0.19   552.38     0.50     0.80   672.64
 MEAN   17.74     0.00    -0.02   552.38    -0.19   552.38     0.50     0.75
 HUB    15.05     0.00    -0.02   552.38    -0.19   552.38     0.50     0.69

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    50.96    46.36     4.60   681.09   877.08     5.65   507.34   494.83     6.90
 MEAN   47.47    43.40     4.07   601.97   817.14     5.65   507.34   494.83     6.90
 HUB    42.77    38.84     3.93   510.73   752.44     5.65   507.34   494.83     6.90

ROTOR EXIT CONDITIONS, STAGE   3    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    19.81   615.21   281.46   547.05  1122.67     0.55     2.26     1.98     8.75
 MEAN   17.51   632.92   303.64   555.33  1119.30     0.57     2.34     2.07     6.78
 HUB    14.85   690.58   397.89   564.43  1116.23     0.62     2.38     2.20     4.28

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   672.27   672.30   390.80     0.60  5579.59     0.92     0.91
 MEAN  594.10   626.70   290.46     0.56  5319.08     0.92     0.91     0.91     1.40
 HUB   503.94   574.31   106.05     0.51  5911.55     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     8.06     1.20     6.59   562.12     1.06   531.80   507.95     3.73
 MEAN    7.99     1.19     6.45   560.71     1.05   528.61   507.63     4.07
 HUB     8.14     1.21     6.31   563.93     1.06   525.72   509.57     4.40

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    27.23    35.54    31.50     4.04     0.93     0.35     1.40
 MEAN   28.67    27.61    23.50     4.11     0.92     0.35     1.62
 HUB    35.18    10.64     6.50     4.14     0.92     0.37     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       0.550      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.3924   712.9929   305.6331   644.1641  1111.7325     0.6413    -0.2020     2.2836

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.0464     6.1230   521.5485   509.4278     5.0688    25.3827    31.5000     6.1173
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.3924   620.8176   135.4272   605.8663  1122.1804     0.5532     0.0458     2.3726

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.0080     6.5224   531.3940   508.1455   451.3937     0.0338     0.2603

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   637.3543     0.0000   637.3543  1120.3983     0.5689     0.1532     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.4177   529.7348   508.6031     0.0000     0.0600     0.0574    -0.0191

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8494     7.9698     1.1886   562.2511    30.4676   263.7624     2.0447

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 190284.203       0.421     676.032  618774.375   0.156226E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.40068E-02

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 4.701   EfDer =  0.996    SH =  0.198772E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     62.868    3888.739       7.970     562.249       1.000       1.000       0.980
 W Kg/sec =  28.577  Wdry =  62.743  WH2O = 0.125  lbm/sec   H2O =   1.104g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    120.728    3735.095       1.379       0.250      53.413      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 109016.195   49291.098       1.451     513.330     353.825     395.845       1.119

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   509.67    -0.18   509.67     0.45     0.73   627.76
 MEAN    16.97     0.00    -0.02   509.67    -0.18   509.67     0.45     0.68
 HUB     14.32     0.00    -0.02   509.67    -0.18   509.67     0.45     0.62

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     52.06    46.36     5.70   653.60   828.96     6.95   541.49   508.27     4.13
 MEAN    48.50    43.80     4.70   575.91   769.18     6.95   541.49   508.27     4.13
 HUB     43.65    37.84     5.81   485.96   704.33     6.95   541.49   508.27     4.13

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     18.88   578.94   278.04   507.80  1155.89      0.50     2.16     1.89     8.34
 MEAN    16.57   593.05   293.21   515.50  1152.36      0.51     2.24     1.97     6.35
 HUB     13.89   643.46   373.72   523.81  1149.08      0.56     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    640.70   624.01   362.67     0.54  5252.70      0.92     0.91
 MEAN   562.45   581.57   269.24     0.50  4862.56      0.92     0.91     0.91     1.43
 HUB    471.37   532.83    97.64     0.46  5193.50      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.39     1.18     7.93   590.73     1.05   563.95   519.32     2.50
 MEAN     9.28     1.16     7.77   588.61     1.05   560.51   518.74     2.71
 HUB      9.38     1.18     7.60   590.41     1.05   557.32   519.91     2.92

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.70    35.53    31.50     4.03     0.93     0.37     1.40
 MEAN    29.63    27.58    23.50     4.08     0.92     0.36     1.62
 HUB     35.51    10.56     6.50     4.06     0.92     0.38     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.996       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   645.6531   294.8561   574.3935  1148.2881     0.5623    -0.1345     2.1803
```

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.3342	7.5540	556.6183	519.7947	3.0070	27.1730	32.4000	5.2270

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	568.9445	127.5976	554.4517	1155.9286	0.4922	0.0867	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.3063	7.9039	564.0523	518.9547	432.2457	0.0276	0.2907

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	564.2897	0.0000	564.2897	1156.3093	0.4880	0.1953	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9016	564.4531	518.9792	0.0000	0.0600	0.0458	0.0852

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8663	9.2775	1.1641	589.8752	27.6669	263.6942	2.0441

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
173245.766	0.422	615.499	606057.188	0.223939E-02

Melt Ratio at Stator LE, Throat, TE
0.38079E+00 0.45818E+00 0.67145E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 5.332 EfDer = 0.998 SH = 0.250580E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
62.868	3888.739	9.277	589.862	1.000	1.000	0.980

W Kg/sec = 28.577 Wdry = 62.711 WH2O = 0.158 lbm/sec H2O = 1.584g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
106.229	3646.589	1.378	0.250	53.430	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
95808.156	49281.012	1.636	509.668	311.454	384.739	1.235

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	451.14	-0.16	451.14	0.39	0.66	582.97
MEAN	15.91	0.00	-0.02	451.14	-0.16	451.14	0.39	0.60	
HUB	13.07	0.00	-0.02	451.14	-0.16	451.14	0.39	0.54	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.04	47.36	6.68	621.70	768.27	8.38	573.63	518.57	2.36
MEAN	50.13	44.80	5.33	540.02	703.79	8.38	573.63	518.57	2.36
HUB	44.52	38.84	5.68	443.54	632.77	8.38	573.63	518.57	2.36

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	534.69	283.40	453.41	1186.67	0.45	2.05	1.78	7.43
MEAN	15.50	541.93	284.33	461.35	1182.38	0.46	2.13	1.86	5.75
HUB	12.59	580.03	340.28	469.73	1178.30	0.49	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	608.81	558.09	325.40	0.47	5087.08	0.92	0.91		
MEAN	525.92	520.77	241.59	0.44	4408.96	0.92	0.91	0.91	1.48
HUB	427.25	477.71	86.97	0.41	4286.12	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.80	1.16	9.42	617.38	1.05	594.58	528.54	1.58
MEAN	10.59	1.14	9.19	613.71	1.04	590.29	527.41	1.73
HUB	10.55	1.14	8.96	613.05	1.04	586.22	527.51	1.88

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.01	35.67	31.50	4.17	0.93	0.40	1.40
MEAN	31.65	27.64	23.50	4.14	0.92	0.38	1.64
HUB	35.92	10.49	6.50	3.99	0.92	0.38	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.998	0.495	73.000

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 ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
  R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
 15.2185   608.0307   289.5475   534.6621  1177.2474     0.5165    -0.2142     2.0437

  Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
 10.6182     8.8757   585.2483   528.3457     1.9601    28.4379    33.0000     4.5621

  STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
 RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
 15.2185   541.2700   123.5995   526.9691  1183.3787     0.4574    -0.0041     2.1315

 BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
  0.9500    10.5769     9.1830   591.3664   527.7906   410.5396     0.0483     0.3117

  VANED DIFFUSER EXIT:
 R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
 14.7013   523.2385     0.0000   523.2385  1184.8750     0.4416     0.2297     0.5109

 Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
  0.9500     9.2761   592.9023   528.0200     0.0000     0.0600     0.0437     0.0597

  STAGE EXIT CONDITIONS, STAGE             5
  Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
  0.8716    10.5837     1.1408   614.7094    24.8492   267.5266     2.0738

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 155926.719       0.421     553.969  610531.000   0.301064E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3429   Tt4 =   614.7094   T1  =   457.7343

   OVERALL EXIT CONDITIONS; ALL          5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    980544.13   3483.6287    203.5695      2.4817      0.8276      2.9563      1.3429     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 84.0%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.229   EfDer =  0.994    SH =  0.321684E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     58.672    3730.491       4.265     457.734       1.000       1.000       0.980
  W Kg/sec =  26.669  Wdry =  58.653  WH2O = 0.019  lbm/sec   H2O =   0.118g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     189.982    3971.133       1.381       0.248      53.359      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 153501.828   46031.219       1.495     831.557     556.171     619.754       1.114

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   443.03    -0.15   443.03     0.43     0.79   714.90
 MEAN    17.06     0.00    -0.02   443.03    -0.15   443.03     0.43     0.69
 HUB     12.51     0.00    -0.02   443.03    -0.15   443.03     0.43     0.59

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.59    50.47     6.12   671.60   804.69     3.76   441.95   450.18    21.10
 MEAN    51.43    47.20     4.23   555.39   710.56     3.76   441.95   450.18    21.10
 HUB     42.60    38.62     3.98   407.26   601.88     3.76   441.95   450.18    21.10

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   677.19   358.27   574.65  1043.92      0.65     7.29     6.52    16.04
 MEAN    18.04   716.63   406.06   590.48  1038.49      0.69     7.43     6.80    12.53
 HUB     15.00   834.62   550.74   627.12  1027.23      0.81     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    671.60   654.53   313.33     0.63  7394.24      0.92     0.91
 MEAN   587.16   617.63   181.10     0.59  7326.25      0.92     0.91     0.91     1.27
 HUB    488.32   630.22    62.42     0.61  8263.06      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.58     1.31     4.22   496.44     1.08   459.57   476.78    13.68
 MEAN     5.56     1.30     4.06   496.08     1.08   454.80   477.33    16.53
 HUB      5.75     1.35     3.74   500.98     1.09   444.98   483.05    24.70

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.94    28.60    24.20     4.40     0.93     0.31     1.80
 MEAN    34.52    17.05    12.70     4.35     0.92     0.26     2.22
 HUB     41.29    -5.68    -9.30     3.62     0.92     0.12     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   764.7976   405.2682   648.5931  1033.9380     0.7397    -0.0878     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.6137     3.9188   450.8260   479.4797    20.0359    31.9989    35.4000     3.4011

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   611.5717   149.6091   592.9899  1053.1727     0.5807     0.2736     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5777     4.4508   467.7783   476.7594   554.9116     0.0321     0.3935

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   608.7161     0.0000   608.7161  1053.4418     0.5778     0.3051     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4358   468.0670   477.2218     0.0000     0.0600     0.0512     0.2644
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8582     5.5468     1.3006   497.8311    40.0997   228.3272     1.7700

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 249511.688       0.553     827.284  663973.000   0.566654E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.156   EfDer =  0.997    SH =  0.917804E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     58.672    3730.491       5.547     497.830       1.000       1.000       0.980
 W Kg/sec =  26.669  Wdry =  58.618  WH2O = 0.054  lbm/sec   H2O =   0.390g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    152.332    3807.879       1.380       0.249      53.378      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 132934.984   46020.441       1.324     590.487     446.119     468.502       1.050

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   540.29    -0.19   540.29     0.51     0.81   682.86
 MEAN    18.08     0.00    -0.02   540.29    -0.19   540.29     0.51     0.75
 HUB     15.21     0.00    -0.02   540.29    -0.19   540.29     0.51     0.69

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.08    46.36     4.72   669.00   860.07     4.66   474.41   478.24    16.03
 MEAN    47.46    42.30     5.16   588.53   799.06     4.66   474.41   478.24    16.03
 HUB     42.52    37.84     4.68   495.16   732.99     4.66   474.41   478.24    16.03

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   604.49   286.05   532.52  1087.66     0.56     2.33     2.04     9.02
 MEAN    18.01   621.75   304.52   542.07  1083.77     0.57     2.40     2.13     7.35
 HUB     15.22   678.18   393.49   552.35  1080.21     0.63     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    664.77   653.45   378.71     0.60  5845.05     0.92     0.91
 MEAN   586.31   610.94   281.79     0.56  5487.78     0.92     0.91     0.91     1.41
 HUB    495.58   561.70   102.09     0.52  5992.99     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.76     1.22     5.49   528.36     1.06   499.05   493.60     7.42
 MEAN     6.68     1.20     5.36   526.49     1.06   495.48   493.04     8.32
 HUB      6.79     1.22     5.22   529.13     1.06   492.24   495.07     9.24

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.24    35.42    31.50     3.92     0.93     0.36     1.40
 MEAN    29.33    27.47    23.50     3.97     0.92     0.35     1.63
 HUB     35.47    10.47     6.50     3.97     0.92     0.37     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.997       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   700.6050   305.3759   630.5497  1076.2041     0.6510    -0.2017     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   6.7297     5.0798   488.6353   495.1284    10.6138    25.8410    30.6000     4.7590

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   593.7252   125.8740   580.2287  1088.3552     0.5455     0.0925     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     6.7008     5.4874   499.7279   493.3820   491.5697     0.0309     0.2654

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   624.1708     0.0000   624.1708  1085.0934     0.5752     0.1626     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3480	496.7600	494.0768	0.0000	0.0600	0.0506	-0.0082

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8621	6.6735	1.2031	527.9922	30.1627	262.6159	2.0358

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
188110.422	0.426	623.701	597635.750	0.111916E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.501 EfDer = 0.998 SH = 0.141422E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.672	3730.491	6.673	527.991	1.000	1.000	0.980

W Kg/sec = 26.669 Wdry = 58.589 WH2O = 0.083 lbm/sec H2O = 0.698g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
130.392	3697.519	1.380	0.249	53.394	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
114531.000	46011.449	1.428	545.479	382.003	424.468	1.111

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	503.90	-0.17	503.90	0.46	0.75	647.58
MEAN	17.74	0.00	-0.02	503.90	-0.17	503.90	0.46	0.70	
HUB	15.05	0.00	-0.02	503.90	-0.17	503.90	0.46	0.64	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.37	46.36	6.01	653.37	825.25	5.79	507.66	493.58	7.97
MEAN	48.90	43.40	5.50	577.47	766.54	5.79	507.66	493.58	7.97
HUB	44.21	38.84	5.37	489.95	702.95	5.79	507.66	493.58	7.97

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	577.96	287.69	501.27	1121.76	0.52	2.26	1.98	8.75
MEAN	17.51	593.26	304.40	509.21	1118.20	0.53	2.34	2.07	6.78
HUB	14.85	646.34	386.83	517.79	1114.90	0.58	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	644.91	615.53	357.21	0.55	5702.68	0.92	0.91		
MEAN	569.92	574.28	265.52	0.51	5332.11	0.92	0.91	0.91	1.44
HUB	483.44	526.73	96.60	0.47	5747.11	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.01	1.20	6.70	557.72	1.06	530.97	506.82	4.43
MEAN	7.92	1.19	6.55	555.79	1.05	527.61	506.27	4.86
HUB	8.02	1.20	6.41	557.95	1.06	524.50	507.79	5.30

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	29.85	35.47	31.50	3.97	0.93	0.38	1.40
MEAN	30.87	27.54	23.50	4.04	0.92	0.37	1.62
HUB	36.76	10.57	6.50	4.07	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.998	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	660.9047	306.3995	585.5889	1112.3943	0.5941	-0.1801	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9669	6.2945	522.2003	507.8059	5.7689	27.6201	31.5000	3.8799

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	564.4445	123.1298	550.8509	1122.4244	0.5029	0.1031	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.9432	6.6991	531.6604	506.5762	451.3937	0.0266	0.2940

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	576.7849	0.0000	576.7849	1121.2098	0.5144	0.2001	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6291	530.5375	506.9825	0.0000	0.0600	0.0421	0.0541

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8732	7.9210	1.1869	557.1514	29.1625	249.6301	1.9351

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
182236.594	0.438	604.226	568860.563	0.175359E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.19850E-03 0.27949E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 5.998 EfDer = 0.999 SH = 0.218433E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.672	3730.491	7.921	557.149	1.000	1.000	0.980

W Kg/sec = 26.669 Wdry = 58.544 WH2O = 0.128 lbm/sec H2O = 1.236g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
112.848	3599.461	1.378	0.250	53.419	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
99900.172	45997.477	1.552	513.330	330.774	395.845	1.197

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	467.05	-0.16	467.05	0.41	0.69	604.96
MEAN	16.97	0.00	-0.02	467.05	-0.16	467.05	0.41	0.64	
HUB	14.32	0.00	-0.02	467.05	-0.16	467.05	0.41	0.58	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.32	46.36	6.96	627.00	781.96	7.06	539.73	506.86	4.88
MEAN	49.80	43.80	6.00	552.48	723.56	7.06	539.73	506.86	4.88
HUB	44.96	37.84	7.12	466.18	660.01	7.06	539.73	506.86	4.88

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	545.59	281.63	467.28	1152.87	0.47	2.16	1.89	8.34
MEAN	16.57	557.31	292.41	474.43	1149.28	0.48	2.24	1.97	6.35
HUB	13.89	603.40	362.85	482.11	1145.91	0.53	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	614.63	573.79	333.00	0.50	5320.33	0.92	0.91		
MEAN	539.56	534.95	247.15	0.47	4849.10	0.92	0.91	0.91	1.47
HUB	452.18	490.32	89.33	0.43	5042.33	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.31	1.18	8.00	584.80	1.05	561.03	517.92	3.01
MEAN	9.18	1.16	7.84	582.35	1.05	557.55	517.19	3.28
HUB	9.23	1.17	7.67	583.36	1.05	554.28	518.06	3.54

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.08	35.48	31.50	3.98	0.93	0.39	1.40
MEAN	31.65	27.52	23.50	4.02	0.92	0.38	1.62
HUB	36.97	10.50	6.50	4.00	0.92	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	603.0541	294.0549	526.5036	1146.0436	0.5262	-0.1229	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.2283	7.6623	554.4721	518.1260	3.5612	29.1836	32.4000	3.2164

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	521.0874	116.8647	507.8137	1153.6063	0.4517	0.1335	2.2705

```
   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.2105     8.0229   561.8190   517.2712   432.2457     0.0226     0.3189

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   516.7417     0.0000   516.7417  1153.9226     0.4478     0.2290     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.0209   562.1555   517.3063     0.0000     0.0600     0.0401     0.1320

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8780     9.1859     1.1597   583.4614    26.3564   251.0231     1.9459

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 165134.828       0.437     547.523  560799.125   0.244114E-02

Melt Ratio at Stator LE, Throat, TE
0.42101E+00 0.50271E+00 0.72732E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.422   EfDer =  1.000    SH =  0.271121E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     58.672    3730.491       9.186     583.448       1.000       1.000       0.980
 W Kg/sec =  26.669  Wdry =  58.513  WH2O = 0.159  lbm/sec   H2O =   1.733g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     99.581    3517.370       1.377       0.251      53.436      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  88410.000   45987.895       1.745     509.668     291.999     384.739       1.318

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   416.31    -0.14   416.31     0.36     0.63   562.31
 MEAN   15.91     0.00    -0.02   416.31    -0.14   416.31     0.36     0.57
 HUB    13.07     0.00    -0.02   416.31    -0.14   416.31     0.36     0.51

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    55.09    47.36     7.73   596.40   727.45     8.42   569.63   517.00     2.88
 MEAN   51.22    44.80     6.42   518.04   664.70     8.42   569.63   517.00     2.88
 HUB    45.63    38.84     6.79   425.49   595.38     8.42   569.63   517.00     2.88

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   506.61   283.07   420.14  1181.41     0.43     2.05     1.78     7.43
 MEAN   15.50   511.53   281.26   427.27  1177.26     0.43     2.13     1.86     5.75
 HUB    12.59   545.65   329.70   434.78  1173.27     0.47     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   584.03   516.82   300.96     0.44  5080.87     0.92     0.91
 MEAN  504.52   482.08   223.26     0.41  4361.07     0.92     0.91     0.91     1.51
 HUB   409.86   442.11    80.16     0.38  4152.83     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.65     1.16     9.40   609.80     1.05   589.35   526.89     1.98
 MEAN   10.43     1.14     9.18   606.07     1.04   585.21   525.70     2.16
 HUB    10.37     1.13     8.96   604.98     1.04   581.26   525.64     2.35

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    33.97    35.62    31.50     4.12     0.93     0.43     1.40
 MEAN   33.36    27.59    23.50     4.09     0.93     0.40     1.64
 HUB    37.17    10.45     6.50     3.95     0.93     0.39     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   570.2795   286.4127   493.1394  1172.9910     0.4862    -0.2017     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.4570     8.9177   581.0491   526.5702     2.4098    30.1478    33.0000     2.8522
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   498.4995   113.8328   485.3286  1179.1355     0.4228     0.0458     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4296     9.2406   587.1623   525.9971   410.5396     0.0410     0.3352

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   482.7251     0.0000   482.7251  1180.3386     0.4090     0.2572     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.3136   588.4004   526.2427     0.0000     0.0600     0.0394     0.1019

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8791    10.4317     1.1356   606.9485    23.5023   256.9289     1.9917

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 147571.266       0.433     489.289  568535.250   0.326972E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3260   Tt4 =   606.9485   T1  =   457.7338

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    932564.81   3092.0244    189.9818      2.4461      0.8546      4.2285      1.3260     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 79.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.681   EfDer =  0.996    SH =  0.331267E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     57.329    3685.723       4.265     457.734       1.000       1.000       0.980
 W Kg/sec =  26.059  Wdry =  57.310  WH2O = 0.019  lbm/sec   H2O =   0.123g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     185.632   3923.478       1.381       0.248      53.359      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 149218.063   44977.160       1.530     831.557     543.441     619.754       1.140

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   430.67    -0.15   430.67     0.42     0.77   706.33
 MEAN    17.06     0.00    -0.02   430.67    -0.15   430.67     0.42     0.68
 HUB     12.51     0.00    -0.02   430.67    -0.15   430.67     0.42     0.58

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.02    50.47     6.55   663.54   791.18      3.78   442.82   450.17    20.93
 MEAN    51.88    47.20     4.68   548.72   697.66      3.78   442.82   450.17    20.93
 HUB     43.07    38.62     4.45   402.37   589.49      3.78   442.82   450.17    20.93

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   663.34   359.75   557.31  1045.27      0.63     7.29     6.52    16.04
 MEAN    18.04   701.07   404.56   572.56  1039.82      0.67     7.43     6.80    12.53
 HUB     15.00   813.54   542.71   606.06  1029.13      0.79     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    663.54   634.73   303.79     0.61  7424.78      0.92     0.91
 MEAN   580.11   598.87   175.55     0.58  7299.27      0.92     0.91     0.91     1.29
 HUB    482.46   609.05    60.25     0.59  8142.53      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.57     1.31     4.26   496.13     1.08   460.76   476.55    13.54
 MEAN     5.54     1.30     4.10   495.48     1.08   455.97   476.88    16.35
 HUB      5.71     1.34     3.80   499.84     1.09   446.64   482.01    23.89

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.84    28.59    24.20     4.39     0.93     0.32     1.80
 MEAN    35.24    17.05    12.70     4.35     0.92     0.28     2.22
 HUB     41.84    -5.68    -9.30     3.62     0.92     0.13     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.996       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   745.9208   403.7791   627.1844  1035.7756     0.7202    -0.0831     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.5918     3.9740   452.4366   478.8516    19.4637    32.7733    35.4000     2.6267

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   592.6028   144.9688   574.5974  1054.4623     0.5620     0.2870     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5606     4.4993   468.9312   476.3253   554.9116     0.0301     0.4037

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   589.1432     0.0000   589.1432  1054.7864     0.5585     0.3189     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4898   469.2677   476.7964     0.0000     0.0600     0.0467     0.2809
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8656     5.5348     1.2978   497.1466    39.4153   225.2947     1.7465

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 245271.656       0.557     794.607  645443.438   0.590288E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.657   EfDer =  0.999    SH =  0.958107E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
    57.329    3685.723       5.535     497.146       1.000       1.000       0.980
W Kg/sec =  26.059  Wdry =  57.274  WH2O = 0.055  lbm/sec   H2O =   0.410g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
   149.065    3764.771       1.380       0.249      53.379      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 129053.852   44966.090       1.353     590.487     436.562     468.502       1.073

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   524.51    -0.18   524.51     0.49     0.80   675.13
 MEAN   18.08     0.00    -0.02   524.51    -0.18   524.51     0.49     0.74
 HUB    15.21     0.00    -0.02   524.51    -0.18   524.51     0.49     0.68

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    51.57    46.36     5.21   660.97   843.94     4.69   475.08   477.91    16.39
 MEAN   47.96    42.30     5.66   581.47   783.22     4.69   475.08   477.91    16.39
 HUB    43.02    37.84     5.18   489.21   717.37     4.69   475.08   477.91    16.39

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   592.89   288.88   517.75  1088.04     0.54     2.33     2.04     9.02
 MEAN   18.01   609.31   305.51   527.18  1084.08     0.56     2.40     2.13     7.35
 HUB    15.22   664.26   390.59   537.29  1080.44     0.61     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   656.79   635.16   367.91     0.58  5902.68     0.92     0.91
 MEAN  579.27   594.02   273.76     0.55  5505.54     0.92     0.91     0.91     1.43
 HUB   489.63   546.34    99.04     0.51  5948.73     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.74     1.22     5.53   527.60     1.06   499.41   493.35     7.68
 MEAN    6.66     1.20     5.39   525.55     1.06   495.77   492.69     8.63
 HUB     6.75     1.22     5.25   527.84     1.06   492.45   494.54     9.61

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    29.16    35.40    31.50     3.90     0.93     0.37     1.40
 MEAN   30.09    27.44    23.50     3.94     0.92     0.36     1.63
 HUB    36.02    10.44     6.50     3.94     0.92     0.38     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.999       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   683.6736   306.3704   611.1848  1077.1730     0.6347    -0.1933     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   6.7059     5.1302   489.5229   494.6527    10.7796    26.6234    30.6000     3.9766

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   575.7977   122.0732   562.7087  1089.0945     0.5287     0.1116     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     6.6812     5.5365   500.4160   492.9595   491.5697     0.0286     0.2774

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   603.9087     0.0000   603.9087  1086.1779     0.5560     0.1788     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4119	497.7621	493.6128	0.0000	0.0600	0.0457	0.0180

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8693	6.6583	1.2030	526.9953	29.8504	257.6257	1.9971

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
186188.094	0.432	603.194	580324.750	0.116611E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.962 EfDer = 0.999 SH = 0.147182E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.329	3685.723	6.658	526.994	1.000	1.000	0.980

W Kg/sec = 26.059 Wdry = 57.244 WH2O = 0.084 lbm/sec H2O = 0.730g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
127.576	3656.600	1.379	0.250	53.396	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
111327.992	44956.996	1.459	545.479	373.767	424.468	1.136

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	489.81	-0.17	489.81	0.45	0.74	640.41
MEAN	17.74	0.00	-0.02	489.81	-0.17	489.81	0.45	0.69	
HUB	15.05	0.00	-0.02	489.81	-0.17	489.81	0.45	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.82	46.36	6.46	645.53	810.46	5.82	507.79	493.24	8.30
MEAN	49.36	43.40	5.96	570.54	752.08	5.82	507.79	493.24	8.30
HUB	44.67	38.84	5.83	484.07	688.76	5.82	507.79	493.24	8.30

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	567.45	289.73	487.90	1121.55	0.51	2.26	1.98	8.75
MEAN	17.51	581.94	304.83	495.72	1117.94	0.52	2.34	2.07	6.78
HUB	14.85	633.60	383.80	504.13	1114.59	0.57	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	637.17	598.97	347.44	0.53	5742.92	0.92	0.91		
MEAN	563.08	558.95	258.26	0.50	5339.43	0.92	0.91	0.91	1.46
HUB	477.64	512.79	93.84	0.46	5701.96	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.99	1.20	6.72	556.57	1.06	530.79	506.52	4.65
MEAN	7.89	1.18	6.57	554.49	1.05	527.38	505.90	5.11
HUB	7.98	1.20	6.43	556.36	1.06	524.22	507.29	5.58

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.70	35.45	31.50	3.95	0.93	0.39	1.40
MEAN	31.59	27.52	23.50	4.02	0.92	0.38	1.62
HUB	37.28	10.54	6.50	4.04	0.92	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	646.3152	306.8255	568.8422	1112.5804	0.5809	-0.1741	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9366	6.3339	522.3848	507.3680	5.9893	28.3418	31.5000	3.1582

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	548.3519	119.6193	535.1458	1122.5073	0.4885	0.1204	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.9161	6.7392	531.7500	506.1460	451.3937	0.0249	0.3043

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	559.9796	0.0000	559.9796	1121.3934	0.4994	0.2124	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6743	530.7222	506.5391	0.0000	0.0600	0.0400	0.0732

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8769	7.8953	1.1858	555.8030	28.8115	245.3456	1.9019

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
180076.406	0.444	583.394	553516.000	0.181692E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.12727E-02 0.35577E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.404 EfDer = 1.000 SH = 0.225122E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.329	3685.723	7.895	555.800	1.000	1.000	0.980

W Kg/sec = 26.059 Wdry = 57.200 WH2O = 0.129 lbm/sec H2O = 1.278g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
110.491	3560.576	1.378	0.250	53.421	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
97289.266	44943.172	1.585	513.330	323.877	395.845	1.222

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	454.84	-0.16	454.84	0.40	0.68	598.43
MEAN	16.97	0.00	-0.02	454.84	-0.16	454.84	0.40	0.63	
HUB	14.32	0.00	-0.02	454.84	-0.16	454.84	0.40	0.57	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.72	46.36	7.36	619.48	768.65	7.07	539.28	506.47	5.12
MEAN	50.20	43.80	6.40	545.85	710.63	7.07	539.28	506.47	5.12
HUB	45.37	37.84	7.53	460.59	647.43	7.07	539.28	506.47	5.12

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	536.25	282.76	455.64	1152.07	0.47	2.16	1.89	8.34
MEAN	16.57	547.22	292.28	462.62	1148.48	0.48	2.24	1.97	6.35
HUB	13.89	592.00	359.81	470.11	1145.08	0.52	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	607.26	559.38	324.50	0.49	5341.53	0.92	0.91		
MEAN	533.08	521.54	240.80	0.45	4846.84	0.92	0.91	0.91	1.48
HUB	446.76	478.08	86.95	0.42	4999.95	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.27	1.17	8.01	583.23	1.05	560.27	517.53	3.18
MEAN	9.14	1.16	7.84	580.69	1.04	556.78	516.75	3.46
HUB	9.18	1.16	7.67	581.47	1.05	553.49	517.53	3.74

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.82	35.46	31.50	3.96	0.93	0.40	1.40
MEAN	32.28	27.50	23.50	4.00	0.93	0.39	1.62
HUB	37.43	10.48	6.50	3.98	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	591.1202	293.9220	512.8674	1145.4469	0.5161	-0.1196	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1837	7.6783	553.9044	517.6575	3.7377	29.8168	32.4000	2.5832

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	507.5142	113.8206	494.5862	1152.9872	0.4402	0.1475	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.1681	8.0407	561.2266	516.7943	432.2457	0.0215	0.3279

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	503.2680	0.0000	503.2680	1153.2847	0.4364	0.2394	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.0387	561.5445	516.8325	0.0000	0.0600	0.0389	0.1460

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8803	9.1445	1.1582	581.7498	25.9946	247.2629	1.9168

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
162899.547	0.442	527.746	546665.313	0.251045E-02

Melt Ratio at Stator LE, Throat, TE
0.43423E+00 0.51730E+00 0.74559E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.767 EfDer = 1.000 SH = 0.278245E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.329	3685.723	9.145	581.736	1.000	1.000	0.980

W Kg/sec = 26.059 Wdry = 57.169 WH2O = 0.160 lbm/sec H2O = 1.781g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
97.598	3480.268	1.377	0.251	53.439	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
86276.836	44933.730	1.781	509.668	286.195	384.739	1.344

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	406.26	-0.14	406.26	0.35	0.62	556.38
MEAN	15.91	0.00	-0.02	406.26	-0.14	406.26	0.35	0.56	
HUB	13.07	0.00	-0.02	406.26	-0.14	406.26	0.35	0.50	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.42	47.36	8.06	589.24	715.84	8.41	568.58	516.55	3.05
MEAN	51.57	44.80	6.77	511.83	653.57	8.41	568.58	516.55	3.05
HUB	45.99	38.84	7.15	420.38	584.71	8.41	568.58	516.55	3.05

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	498.67	283.13	410.50	1180.01	0.42	2.05	1.78	7.43
MEAN	15.50	502.89	280.49	417.39	1175.90	0.43	2.13	1.86	5.75
HUB	12.59	535.82	326.74	424.66	1171.94	0.46	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	577.02	504.86	293.89	0.43	5081.93	0.92	0.91		
MEAN	498.47	470.88	217.97	0.40	4349.21	0.92	0.91	0.91	1.53
HUB	404.94	431.81	78.20	0.37	4115.52	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.59	1.16	9.38	607.77	1.04	587.96	526.42	2.11
MEAN	10.37	1.13	9.16	604.02	1.04	583.87	525.22	2.31
HUB	10.30	1.13	8.94	602.82	1.04	579.94	525.11	2.51

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	34.59	35.60	31.50	4.10	0.93	0.43	1.40
MEAN	33.90	27.57	23.50	4.07	0.93	0.41	1.64
HUB	37.58	10.43	6.50	3.93	0.93	0.40	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	559.6099	285.6375	481.2218	1171.8561	0.4775	-0.1980	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3937	8.9126	579.9352	526.0668	2.5561	30.6920	33.0000	2.3080

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     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    15.2185   486.2952   111.0459   473.4467  1178.0009     0.4128     0.0608     2.1315

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500    10.3695     9.2385   586.0439   525.4850   410.5396     0.0393     0.3428

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
    14.7013   471.1067     0.0000   471.1067  1179.1298     0.3995     0.2659     0.5109

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.3064   587.2068   525.7370     0.0000     0.0600     0.0384     0.1148

     STAGE EXIT CONDITIONS, STAGE            5
     Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
     0.8805    10.3706     1.1341   604.8686    23.1342   253.7067     1.9667

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 145293.875       0.436     470.709  555150.188   0.336129E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3214   Tt4 =   604.8686   T1  =   457.7336

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    919729.56   2979.6504    185.6321      2.4317      0.8602      4.6809      1.3214     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 76.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.020   EfDer =  0.997    SH =  0.338190E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     56.365    3655.387       4.265     457.733       1.000       1.000       0.980
 W Kg/sec =  25.621  Wdry =  56.346  WH2O = 0.019  lbm/sec   H2O =   0.126g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     182.513   3891.185       1.381       0.248      53.359      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 146192.234   44221.211       1.556     831.557     534.311     619.754       1.160

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   421.93    -0.15   421.93     0.41     0.76   700.51
 MEAN    17.06     0.00    -0.02   421.93    -0.15   421.93     0.41     0.67
 HUB     12.51     0.00    -0.02   421.93    -0.15   421.93     0.41     0.57

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.34    50.47     6.87   658.08   781.85     3.80   443.42   450.16    20.83
 MEAN    52.22    47.20     5.02   544.21   688.73     3.80   443.42   450.16    20.83
 HUB     43.41    38.62     4.79   399.06   580.85     3.80   443.42   450.16    20.83

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   653.84   360.97   545.16  1046.19      0.62     7.29     6.52    16.04
 MEAN    18.04   690.37   403.70   560.03  1040.74      0.66     7.43     6.80    12.53
 HUB     15.00   799.13   537.28   591.56  1030.40      0.78     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    658.08   620.86   297.11     0.59  7449.88      0.92     0.91
 MEAN   575.34   585.74   171.64     0.56  7283.59      0.92     0.91     0.91     1.30
 HUB    478.49   594.47    58.79     0.58  8060.96      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.56     1.30     4.29   495.94     1.08   461.57   476.40    13.45
 MEAN     5.53     1.30     4.13   495.09     1.08   456.77   476.59    16.24
 HUB      5.68     1.33     3.83   499.07     1.09   447.74   481.32    23.40

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.51    28.59    24.20     4.39     0.93     0.33     1.80
 MEAN    35.79    17.04    12.70     4.34     0.92     0.29     2.22
 HUB     42.25    -5.68    -9.30     3.62     0.92     0.14     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   733.0459   402.9140   612.3859  1037.0099     0.7069    -0.0800     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.5773     4.0112   453.5201   478.4485    19.1150    33.3426    35.4000     2.0574

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   579.3846   141.7352   561.7808  1055.3529     0.5490     0.2967     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5489     4.5323   469.7284   476.0406   554.9116     0.0288     0.4113

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   575.6277     0.0000   575.6277  1055.7001     0.5453     0.3287     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.5259   470.0846   476.5185     0.0000     0.0600     0.0439     0.2925
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8701     5.5261     1.2958   496.6977    38.9666   223.0624     1.7292

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 242491.484       0.560     772.398  632355.125   0.607458E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.026   EfDer =  0.999    SH =  0.987513E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     56.365    3655.387       5.526     496.697       1.000       1.000       0.980
 W Kg/sec =  25.621  Wdry =  56.310  WH2O = 0.056  lbm/sec   H2O =   0.424g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    146.723    3735.472       1.380       0.249      53.380      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 126342.203   44209.930       1.374     590.487     429.712     468.502       1.090

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   513.49    -0.18   513.49     0.48     0.78   669.87
 MEAN    18.08     0.00    -0.02   513.49    -0.18   513.49     0.48     0.73
 HUB     15.21     0.00    -0.02   513.49    -0.18   513.49     0.48     0.67

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.94     46.36     5.58   655.53   832.84     4.72   475.55   477.68    16.63
 MEAN    48.33     42.30     6.03   576.68   772.30     4.72   475.55   477.68    16.63
 HUB     43.39     37.84     5.55   485.19   706.58     4.72   475.55   477.68    16.63

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   584.94   291.06   507.39  1088.34      0.54     2.33     2.04     9.02
 MEAN    18.01   600.71   306.37   516.72  1084.33      0.55     2.40     2.13     7.35
 HUB     15.22   654.58   388.67   526.71  1080.62      0.61     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    651.38   622.32   360.33     0.57  5947.00      0.92     0.91
 MEAN   574.50   582.14   268.13     0.54  5520.93      0.92     0.91     0.91     1.44
 HUB    485.60   535.55    96.94     0.50  5919.38      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.74     1.22     5.55   527.12     1.06   499.68   493.19     7.85
 MEAN     6.64     1.20     5.41   524.94     1.06   496.00   492.47     8.84
 HUB      6.73     1.22     5.27   526.98     1.06   492.62   494.20     9.86

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.84    35.38    31.50     3.88     0.93     0.38     1.40
 MEAN    30.66    27.43    23.50     3.93     0.93     0.37     1.63
 HUB     36.42    10.43     6.50     3.93     0.93     0.38     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   672.0918   307.2313  597.7595  1077.8456     0.6236    -0.1876     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6894     5.1639   490.1398   494.3465    10.8986    27.2019    30.6000     3.3981

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   563.3353  119.4311  550.5296  1089.6263     0.5170     0.1252     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6672     5.5695   500.9112   492.6851   491.5697     0.0271     0.2861

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   589.9905     0.0000   589.9905  1086.9229     0.5428     0.1903     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4541	498.4514	493.3135	0.0000	0.0600	0.0427	0.0361

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8736	6.6471	1.2029	526.3497	29.6537	254.0446	1.9693

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
184979.359	0.436	589.207	568139.813	0.120054E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.303 EfDer = 1.000 SH = 0.151423E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.365	3655.387	6.647	526.349	1.000	1.000	0.980

W Kg/sec = 25.621 Wdry = 56.280 WH2O = 0.085 lbm/sec H2O = 0.754g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
125.567	3628.727	1.379	0.250	53.397	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
109090.266	44200.762	1.483	545.479	367.891	424.468	1.154

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	479.96	-0.17	479.96	0.44	0.73	635.53
MEAN	17.74	0.00	-0.02	479.96	-0.17	479.96	0.44	0.68	
HUB	15.05	0.00	-0.02	479.96	-0.17	479.96	0.44	0.62	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.15	46.36	6.79	640.22	800.28	5.84	507.91	493.02	8.54
MEAN	49.70	43.40	6.30	565.84	742.11	5.84	507.91	493.02	8.54
HUB	45.02	38.84	6.18	480.08	678.97	5.84	507.91	493.02	8.54

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	560.24	291.34	478.53	1121.46	0.50	2.26	1.98	8.75
MEAN	17.51	574.14	305.29	486.25	1117.82	0.51	2.34	2.07	6.78
HUB	14.85	624.77	381.78	494.55	1114.42	0.56	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	631.92	587.36	340.59	0.52	5774.67	0.92	0.91		
MEAN	558.45	548.20	253.15	0.49	5347.54	0.92	0.91	0.91	1.47
HUB	473.70	503.02	91.92	0.45	5671.96	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.97	1.20	6.74	555.84	1.06	530.71	506.34	4.81
MEAN	7.87	1.18	6.59	553.66	1.05	527.27	505.66	5.29
HUB	7.95	1.20	6.44	555.31	1.06	524.07	506.97	5.77

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.33	35.44	31.50	3.94	0.93	0.40	1.40
MEAN	32.12	27.50	23.50	4.00	0.93	0.39	1.62
HUB	37.67	10.53	6.50	4.03	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	636.3046	307.2950	557.1833	1112.7450	0.5718	-0.1699	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9152	6.3599	522.5469	507.0866	6.1431	28.8774	31.5000	2.6226

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	537.1346	117.1723	524.1987	1122.6124	0.4785	0.1329	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8966	6.7659	531.8577	505.8672	451.3937	0.0239	0.3120

```
    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   548.3262     0.0000   548.3262  1121.5607     0.4889     0.2212     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.7039   530.8885   506.2513     0.0000     0.0600     0.0390     0.0866

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8788     7.8763     1.1849   554.9330    28.5874   242.2579     1.8780

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 178700.547       0.448     569.208  542633.625   0.186375E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.22074E-02 0.41645E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 6.706   EfDer =  1.000    SH =  0.230087E-02

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     56.365    3655.387       7.876     554.930       1.000       1.000       0.980
 W Kg/sec =  25.621  Wdry =  56.236  WH2O = 0.130  lbm/sec   H2O =   1.309g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    108.810    3534.039       1.378       0.250      53.423      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  95460.469   44187.043       1.609     513.330     318.959     395.845       1.241

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   446.29    -0.15   446.29     0.39     0.67   593.97
 MEAN    16.97     0.00    -0.02   446.29    -0.15   446.29     0.39     0.62
 HUB     14.32     0.00    -0.02   446.29    -0.15   446.29     0.39     0.57

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     54.01    46.36     7.65   614.38   759.49     7.08   539.03   506.22     5.28
 MEAN    50.51    43.80     6.71   541.35   701.72     7.08   539.03   506.22     5.28
 HUB     45.68    37.84     7.84   456.80   638.73     7.08   539.03   506.22     5.28

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   529.83   283.73   447.45  1151.59     0.46     2.16     1.89     8.34
 MEAN    16.57   540.24   292.33   454.32  1147.99     0.47     2.24     1.97     6.35
 HUB     13.89   584.09   357.79   461.68  1144.57     0.51     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    602.26   549.24   318.52     0.48  5359.87     0.92     0.91
 MEAN   528.69   512.13   236.36     0.45  4847.64     0.92     0.91     0.91     1.49
 HUB    443.08   469.49    85.29     0.41  4971.87     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.25     1.17     8.01   582.22     1.05   559.81   517.28     3.29
 MEAN     9.11     1.16     7.84   579.61     1.04   556.31   516.47     3.58
 HUB      9.14     1.16     7.67   580.24     1.05   553.01   517.19     3.88

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.38    35.45    31.50     3.95     0.93     0.41     1.40
 MEAN    32.76    27.49    23.50     3.99     0.93     0.40     1.62
 HUB     37.77    10.47     6.50     3.97     0.93     0.41     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   582.8724   293.9735   503.3088  1145.1012     0.5090    -0.1173     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.1522     7.6884   553.5776   517.3536     3.8600    30.2884    32.4000     2.1116

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   497.9973   111.6862   485.3118  1152.6327     0.4321     0.1579     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1379     8.0521   560.8893   516.4832   432.2457     0.0208     0.3346

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   493.8250     0.0000   493.8250  1152.9169     0.4283     0.2470     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.0500   561.1942   516.5233     0.0000     0.0600     0.0381     0.1563

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8817     9.1150     1.1573   580.6454    25.7614   244.5324     1.8956

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 161461.891       0.445     514.298  536565.500   0.256180E-02

Melt Ratio at Stator LE, Throat, TE
0.44509E+00 0.52924E+00 0.76045E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.026   EfDer =  1.000    SH =  0.283524E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     56.365    3655.387       9.115     580.631       1.000       1.000       0.980
 W Kg/sec =  25.621  Wdry =  56.206  WH2O = 0.160  lbm/sec   H2O =   1.816g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     96.177    3454.905       1.377       0.251      53.440      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  84773.141   44177.707       1.807     509.668     282.039     384.739       1.364

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   399.18    -0.14   399.18     0.34     0.61   552.33
 MEAN    15.91     0.00    -0.02   399.18    -0.14   399.18     0.34     0.56
 HUB     13.07     0.00    -0.02   399.18    -0.14   399.18     0.34     0.50

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.67    47.36     8.31   584.39   707.83     8.41   567.94   516.26     3.16
 MEAN    51.83    44.80     7.03   507.61   645.88     8.41   567.94   516.26     3.16
 HUB     46.25    38.84     7.41   416.92   577.31     8.41   567.94   516.26     3.16

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   493.21   283.38   403.67  1179.14      0.42     2.05     1.78     7.43
 MEAN    15.50   496.89   280.11   410.41  1175.04      0.42     2.13     1.86     5.75
 HUB     12.59   528.97   324.80   417.52  1171.10      0.45     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    572.27   496.40   288.89     0.42  5086.44      0.92     0.91
 MEAN   494.36   462.97   214.25     0.39  4343.26      0.92     0.91     0.91     1.53
 HUB    401.61   424.52    76.82     0.36  4090.99      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.54     1.16     9.37   606.47     1.04   587.09   526.13     2.21
 MEAN    10.33     1.13     9.15   602.70     1.04   583.03   524.91     2.41
 HUB     10.25     1.12     8.93   601.41     1.04   579.12   524.76     2.62

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     35.07    35.59    31.50     4.09     0.93     0.44     1.40
 MEAN    34.31    27.57    23.50     4.07     0.93     0.41     1.64
 HUB     37.88    10.42     6.50     3.92     0.93     0.40     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   552.1951   285.2490   472.8133  1171.1597     0.4715    -0.1953     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.3496     8.9086   579.2543   525.7427     2.6594    31.1026    33.0000     1.8974
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   477.6880   109.0805   465.0669  1177.3104     0.4057     0.0718     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.3273     9.2365   585.3660   525.1536   410.5396     0.0382     0.3486

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   462.8999     0.0000   462.8999  1178.3892     0.3928     0.2724     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.3010   586.4783   525.4110     0.0000     0.0600     0.0378     0.1245

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8814    10.3278     1.1331   603.5269    22.8970   251.3175     1.9482

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 143830.109       0.439     458.136  545511.750   0.343105E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3185   Tt4 =   603.5269   T1  =   457.7335

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    911463.38   2903.2476    182.5126      2.4217      0.8634      5.0203      1.3185     37.3740
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5µm, ISA +36R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 3.082   EfDer =  0.986    SH =  0.658166E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     61.298    3973.534       4.265     477.915       1.000       1.000       0.980
  W Kg/sec =  27.863  Wdry =  61.257  WH2O = 0.040  lbm/sec   H2O =   0.228g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     202.817    4139.589       1.381       0.249      53.370      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 170325.938   48084.855       1.400     831.557     593.874     619.754       1.044

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   491.59    -0.17   491.59     0.47     0.83   745.23
 MEAN    17.06     0.00    -0.02   491.59    -0.17   491.59     0.47     0.74
 HUB     12.51     0.00    -0.02   491.59    -0.17   491.59     0.47     0.63

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.51     50.47     5.04   715.36   868.12      3.67   458.51   464.09    18.67
 MEAN    50.28     47.20     3.08   591.57   769.29      3.67   458.51   464.09    18.67
 HUB     41.44     38.62     2.82   433.79   655.73      3.67   458.51   464.09    18.67

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   738.48   365.13   641.89  1062.46      0.70     7.29     6.52    16.04
 MEAN    18.04   784.13   422.73   660.43  1056.78      0.74     7.43     6.80    12.53
 HUB     15.00   925.29   591.49   711.54  1042.74      0.89     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    715.36   731.22   350.23     0.69  7536.18      0.92     0.90
 MEAN   625.41   690.83   202.68     0.65  7627.28      0.92     0.90     0.90     1.22
 HUB    520.13   715.11    71.36     0.69  8874.47      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.62     1.32     4.09   519.89     1.09   476.09   489.75    12.42
 MEAN     5.64     1.32     3.93   520.39     1.09   471.02   491.30    14.93
 HUB      5.89     1.38     3.55   527.34     1.10   458.59   500.34    23.84

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.63    28.62    24.20     4.42     0.93     0.27     1.80
 MEAN    32.62    17.06    12.70     4.36     0.91     0.23     2.22
 HUB     39.74    -5.73    -9.30     3.57     0.91     0.07     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.986       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   846.1885   421.9100   733.5032  1050.0707     0.8058    -0.1042     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.7005     3.7356   465.0706   494.7288    19.1810    29.9074    35.4000     5.4926

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   685.5095   167.6965   664.6812  1072.1124     0.6394     0.2388     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.6439     4.3009   484.8307   489.7952   554.9116     0.0404     0.3669

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   686.5549     0.0000   686.5549  1071.9382     0.6405     0.2650     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.2564	484.7294	490.4254	0.0000	0.0600	0.0692	0.2149

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8290	5.5903	1.3109	522.5373	44.6241	236.2108	1.8311

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
278031.813	0.543	963.101	682869.750	0.107727E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.847 EfDer = 0.992 SH = 0.165259E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
61.298	3973.534	5.590	522.536	1.000	1.000	0.980

W Kg/sec = 27.863 Wdry = 61.196 WH2O = 0.101 lbm/sec H2O = 0.658g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
161.782	3958.917	1.379	0.250	53.402	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
148237.344	48066.043	1.246	590.487	474.005	468.502	0.988

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	602.46	-0.21	602.46	0.56	0.86	709.94
MEAN	18.08	0.00	-0.02	602.46	-0.21	602.46	0.56	0.80	
HUB	15.21	0.00	-0.02	602.46	-0.21	602.46	0.56	0.74	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.80	46.36	3.44	712.58	933.29	4.54	493.49	491.27	12.67
MEAN	46.15	42.30	3.85	626.87	869.59	4.54	493.49	491.27	12.67
HUB	41.21	37.84	3.37	527.42	800.84	4.54	493.49	491.27	12.67

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	656.12	287.56	589.75	1110.86	0.59	2.33	2.04	9.02
MEAN	18.01	676.15	311.56	600.09	1107.02	0.61	2.40	2.13	7.35
HUB	15.22	738.36	414.03	611.36	1103.59	0.67	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	708.08	724.32	420.52	0.65	5876.21	0.92	0.91		
MEAN	624.51	676.79	312.95	0.61	5614.93	0.92	0.91	0.91	1.38
HUB	527.87	621.87	113.84	0.56	6305.88	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.83	1.22	5.41	555.15	1.06	520.70	504.82	5.83
MEAN	6.77	1.21	5.28	553.70	1.06	517.11	504.69	6.47
HUB	6.93	1.24	5.15	557.53	1.07	513.90	507.36	7.09

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.99	35.49	31.50	3.99	0.93	0.33	1.40
MEAN	27.44	27.54	23.50	4.04	0.92	0.33	1.63
HUB	34.11	10.55	6.50	4.05	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	772.5948	312.4346	706.6027	1096.8654	0.7044	-0.2288	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.8272	4.9232	507.7173	507.7538	8.6889	23.8533	30.6000	6.7467

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	663.3660	140.6383	648.2864	1110.3417	0.5974	0.0409	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7818	5.3446	520.2644	505.1204	491.5697	0.0391	0.2335

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	704.2371	0.0000	704.2371	1105.5408	0.6370	0.1162	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.1444	515.8025	506.2628	0.0000	0.0600	0.0684	-0.0873

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8341	6.7360	1.2049	555.4608	32.9250	276.0848	2.1402

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
205842.891	0.411	713.039	617138.438	0.197303E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.344 EfDer = 0.994 SH = 0.242212E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
61.298	3973.534	6.736	555.460	1.000	1.000	0.980

W Kg/sec = 27.863 Wdry = 61.149 WH2O = 0.148 lbm/sec H2O = 1.125g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
138.431	3839.798	1.378	0.250	53.427	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
127059.273	48051.441	1.344	545.479	405.804	424.468	1.046

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	559.01	-0.19	559.01	0.50	0.80	672.50
MEAN	17.74	0.00	-0.02	559.01	-0.19	559.01	0.50	0.74	
HUB	15.05	0.00	-0.02	559.01	-0.19	559.01	0.50	0.68	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.23	46.36	4.87	695.94	892.80	5.70	530.52	504.88	5.94
MEAN	47.74	43.40	4.34	615.09	831.30	5.70	530.52	504.88	5.94
HUB	43.04	38.84	4.20	521.87	764.88	5.70	530.52	504.88	5.94

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	625.20	292.09	552.77	1148.01	0.54	2.26	1.98	8.75
MEAN	17.51	643.05	313.47	561.47	1144.43	0.56	2.34	2.07	6.78
HUB	14.85	701.60	407.73	570.97	1141.17	0.61	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	686.92	679.30	394.83	0.59	5790.19	0.92	0.91		
MEAN	607.05	633.59	293.58	0.55	5491.21	0.92	0.91	0.91	1.41
HUB	514.93	580.94	107.21	0.51	6057.64	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.12	1.20	6.65	587.51	1.06	556.31	516.99	3.24
MEAN	8.04	1.19	6.51	585.85	1.05	552.85	516.72	3.53
HUB	8.18	1.22	6.36	588.99	1.06	549.70	518.67	3.81

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	27.85	35.54	31.50	4.04	0.93	0.36	1.40
MEAN	29.17	27.60	23.50	4.10	0.92	0.35	1.62
HUB	35.53	10.63	6.50	4.13	0.92	0.38	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	722.9099	315.5276	650.4160	1136.9980	0.6358	-0.1976	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0978	6.1918	545.7632	518.6771	4.2564	25.8788	31.5000	5.6212

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	626.1937	136.5999	611.1129	1147.7892	0.5456	0.0592	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.0622	6.6037	556.1670	517.0048	451.3937	0.0322	0.2687

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	642.1859	0.0000	642.1859	1146.0715	0.5603	0.1648	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.5060	554.5398	517.3615	0.0000	0.0600	0.0540	-0.0017

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8558	8.0272	1.1917	587.4222	31.9900	260.6328	2.0204

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
200566.109	0.425	694.760	583129.313	0.277592E-02

Melt Ratio at Stator LE, Throat, TE
0.19317E+00 0.25134E+00 0.42964E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 5.041 EfDer = 0.997 SH = 0.313532E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
61.298	3973.534	8.027	587.413	1.000	1.000	0.980

W Kg/sec = 27.863 Wdry = 61.106 WH2O = 0.192 lbm/sec H2O = 1.682g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
119.458	3733.876	1.377	0.251	53.450	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
110066.711	48037.883	1.465	513.330	350.365	395.845	1.130

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	514.58	-0.18	514.58	0.44	0.73	627.55
MEAN	16.97	0.00	-0.02	514.58	-0.18	514.58	0.44	0.68	
HUB	14.32	0.00	-0.02	514.58	-0.18	514.58	0.44	0.62	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.39	46.36	6.03	667.85	843.24	7.02	566.33	516.45	3.06
MEAN	48.84	43.80	5.04	588.47	781.86	7.02	566.33	516.45	3.06
HUB	43.99	37.84	6.15	496.56	715.22	7.02	566.33	516.45	3.06

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	587.98	289.09	512.00	1182.06	0.50	2.16	1.89	8.34
MEAN	16.57	601.97	303.20	520.04	1178.33	0.51	2.24	1.97	6.35
HUB	13.89	652.93	383.17	528.68	1174.85	0.56	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	654.68	629.13	365.59	0.53	5461.34	0.92	0.91		
MEAN	574.71	586.65	271.51	0.50	5028.24	0.92	0.91	0.91	1.44
HUB	481.64	537.77	98.47	0.46	5324.80	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.49	1.18	8.03	617.55	1.05	590.02	526.86	1.86
MEAN	9.36	1.17	7.86	615.16	1.05	586.31	526.28	2.01
HUB	9.45	1.18	7.68	616.79	1.05	582.85	527.38	2.16

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	29.45	35.53	31.50	4.03	0.93	0.38	1.40
MEAN	30.24	27.57	23.50	4.07	0.92	0.37	1.62
HUB	35.93	10.55	6.50	4.05	0.92	0.38	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.997	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	654.3503	304.9074	578.9696	1174.3334	0.5572	-0.1312	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.4173	7.6509	582.4193	527.3039	2.1963	27.7730	32.4000	4.6270

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   572.7943   128.4610   558.2034  1182.3246     0.4845     0.1013     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.3918     8.0173   590.3746   526.3921   432.2457     0.0262     0.2999

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   568.0605     0.0000   568.0605  1182.7161     0.4803     0.2066     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.0159   590.8081   526.6425     0.0000     0.0600     0.0439     0.1004

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8695     9.3639     1.1665   616.4741    29.0870   260.0436     2.0158

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 182812.063       0.427     633.260  571097.063   0.354373E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.690   EfDer =  0.999    SH =  0.461357E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     61.298    3973.534       9.364     616.472       1.000       1.000       0.980
 W Kg/sec =  27.863  Wdry =  61.015  WH2O = 0.283  lbm/sec   H2O =   2.818g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    104.907    3644.834       1.375       0.252      53.498      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  96667.180   48009.672       1.655     509.668     307.972     384.739       1.249

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   455.15    -0.16   455.15     0.38     0.66   582.69
 MEAN    15.91     0.00    -0.02   455.15    -0.16   455.15     0.38     0.60
 HUB     13.07     0.00    -0.02   455.15    -0.16   455.15     0.38     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     54.39    47.36     7.03   635.26   781.61     8.48   600.06   527.09     2.16
 MEAN    50.49    44.80     5.69   551.79   715.41     8.48   600.06   527.09     2.16
 HUB     44.89    38.84     6.05   453.21   642.42     8.48   600.06   527.09     2.16

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   543.49   294.22   456.97  1213.35      0.45     2.05     1.78     7.43
 MEAN    15.50   550.22   293.90   465.15  1208.89      0.46     2.13     1.86     5.75
 HUB     12.59   588.38   348.90   473.77  1204.64      0.49     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    622.08   562.42   327.86     0.46  5281.11      0.92     0.91
 MEAN   537.39   525.03   243.49     0.43  4557.19      0.92     0.91     0.91     1.49
 HUB    436.57   481.81    87.67     0.40  4394.69      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.93     1.17     9.54   645.48     1.05   622.08   536.99     1.55
 MEAN    10.70     1.14     9.31   641.51     1.04   617.53   535.92     1.69
 HUB     10.65     1.14     9.07   640.61     1.04   613.19   536.08     1.83

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.78    35.66    31.50     4.16     0.93     0.41     1.40
 MEAN    32.29    27.63    23.50     4.13     0.92     0.39     1.64
 HUB     36.37    10.48     6.50     3.98     0.92     0.38     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   616.2851   299.2861   538.7347  1203.8163     0.5119    -0.2102     2.0437
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    Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
   10.7319     9.0018   612.4994   537.0165     1.8831    29.0537    33.0000     3.9463

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth        Cuth       Cmth       Aoth          Machth     cp 2-Th     Stat Chord
   15.2185   544.6537   124.3721   530.2634  1210.2542     0.4500     0.0143     2.1315

   BlockageTh  PtTh       PsTh       TsTh       TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.6942     9.3290   619.0821   536.2677   410.5396     0.0460     0.3210

    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4        Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   526.7328     0.0000   526.7328  1211.6909     0.4347     0.2409     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.4186   620.6104   536.5475     0.0000     0.0600     0.0419     0.0760

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
    0.8736    10.7001     1.1427   642.5328    26.0614   263.4045     2.0419

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 164802.906       0.426     570.876  575759.125   0.567688E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3444   Tt4 =   642.5328   T1  =   477.9153

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
   1032055.75   3575.0349    202.8167      2.5091      0.8320      3.0820      1.3444     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 84.0%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.264   EfDer =  0.994    SH =  0.714125E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     57.524    3826.412       4.265     477.915       1.000       1.000       0.980
  W Kg/sec =  26.147  Wdry =  57.483  WH2O = 0.041  lbm/sec   H2O =   0.252g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     190.329    3986.318       1.381       0.249      53.371      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 157251.328   45123.285       1.492     831.557     557.332     619.754       1.112

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   453.85    -0.16   453.85     0.43     0.79   717.64
 MEAN    17.06     0.00    -0.02   453.85    -0.16   453.85     0.43     0.70
 HUB     12.51     0.00    -0.02   453.85    -0.16   453.85     0.43     0.59

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.63    50.47     6.16   688.87   825.07     3.75   461.38   463.98    18.11
 MEAN    51.46    47.20     4.26   569.67   728.48     3.75   461.38   463.98    18.11
 HUB     42.64    38.62     4.02   417.73   616.94     3.75   461.38   463.98    18.11

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   693.68   368.28   587.84  1066.83      0.65     7.29     6.52    16.04
 MEAN    18.04   734.15   416.89   604.30  1061.19      0.69     7.43     6.80    12.53
 HUB     15.00   855.22   564.80   642.18  1049.57      0.81     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    688.87   669.58   320.59     0.63  7600.88      0.92     0.91
 MEAN   602.25   632.09   185.37     0.60  7521.65      0.92     0.91     0.91     1.27
 HUB    500.88   645.36    63.92     0.61  8473.91      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.59     1.31     4.22   518.67     1.09   480.04   488.79    11.93
 MEAN     5.58     1.31     4.06   518.24     1.08   474.97   489.65    14.28
 HUB      5.76     1.35     3.74   523.35     1.10   464.63   496.14    20.88

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.07    28.61    24.20     4.41     0.93     0.31     1.80
 MEAN    34.60    17.05    12.70     4.35     0.92     0.26     2.22
 HUB     41.33    -5.68    -9.30     3.62     0.92     0.12     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   783.5024   416.0772   663.8944  1056.5221     0.7416    -0.0876     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.6263     3.9214   470.8380   492.1416    17.1178    32.0763    35.4000     3.3237

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   625.2844   152.9636   606.2859  1076.3750     0.5809     0.2762     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5903     4.4606   488.7259   488.3144   554.9116     0.0321     0.3955

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   622.3589     0.0000   622.3589  1076.6556     0.5780     0.3075     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4457   489.0290   488.9396     0.0000     0.0600     0.0510     0.2671
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8582     5.5594     1.3036   520.0862    42.1736   227.9504     1.7671

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 262866.625       0.554     854.505  630451.000   0.120455E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.241   EfDer =  0.998    SH =  0.186289E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     57.524    3826.412       5.559     520.085       1.000       1.000       0.980
 W Kg/sec =  26.147  Wdry =  57.417  WH2O = 0.107  lbm/sec   H2O =   0.759g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    152.306    3821.309       1.379       0.250      53.409      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 135953.203   45102.879       1.323     590.487     446.299     468.502       1.050

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   552.53    -0.19   552.53     0.51     0.81   685.26
 MEAN    18.08     0.00    -0.02   552.53    -0.19   552.53     0.51     0.76
 HUB     15.21     0.00    -0.02   552.53    -0.19   552.53     0.51     0.69

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.17    46.36     4.81   686.20   881.15     4.67   495.67   490.26    13.46
 MEAN    47.54    42.30     5.24   603.66   818.50     4.67   495.67   490.26    13.46
 HUB     42.60    37.84     4.76   507.89   750.63     4.67   495.67   490.26    13.46

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   618.63   295.18   543.67  1111.87      0.56     2.33     2.04     9.02
 MEAN    18.01   636.28   313.55   553.66  1107.81      0.57     2.40     2.13     7.35
 HUB     15.22   694.08   404.02   564.37  1104.10      0.63     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    681.86   667.16   386.68     0.60  6031.47      0.92     0.91
 MEAN   601.38   624.01   287.83     0.56  5650.53      0.92     0.91     0.91     1.42
 HUB    508.32   573.93   104.30     0.52  6153.28      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.79     1.22     5.52   552.30     1.06   521.69   504.10     6.47
 MEAN     6.71     1.21     5.38   550.26     1.06   517.89   503.70     7.22
 HUB      6.82     1.23     5.24   552.95     1.06   514.42   505.86     7.97

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.50    35.42    31.50     3.92     0.93     0.36     1.40
 MEAN    29.52    27.47    23.50     3.97     0.92     0.36     1.63
 HUB     35.60    10.47     6.50     3.97     0.92     0.37     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   716.6194   314.4338   643.9524  1100.1393     0.6514    -0.2003     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7584     5.1009   510.7903   506.1612     9.0263    26.0257    30.6000     4.5743

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   605.8253   128.4393   592.0538  1112.6825     0.5445     0.0977     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.7298     5.5163   522.5034   503.8249   491.5697     0.0305     0.2688

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   636.7656     0.0000   636.7656  1109.3843     0.5740     0.1669     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3776	519.4379	504.7159	0.0000	0.0600	0.0498	-0.0020

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8633	6.7030	1.2057	551.8376	31.7530	261.4886	2.0270

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
198652.969	0.427	645.764	567504.188	0.221471E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.640 EfDer = 0.999 SH = 0.271416E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.524	3826.412	6.703	551.837	1.000	1.000	0.980

W Kg/sec = 26.147 Wdry = 57.368 WH2O = 0.156 lbm/sec H2O = 1.286g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
130.120	3709.746	1.378	0.250	53.436	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
116901.203	45087.711	1.430	545.479	381.511	424.468	1.113

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	514.31	-0.18	514.31	0.46	0.75	649.72
MEAN	17.74	0.00	-0.02	514.31	-0.18	514.31	0.46	0.70	
HUB	15.05	0.00	-0.02	514.31	-0.18	514.31	0.46	0.64	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.50	46.36	6.14	670.17	844.92	5.81	530.74	503.98	6.74
MEAN	49.04	43.40	5.64	592.32	784.58	5.81	530.74	503.98	6.74
HUB	44.35	38.84	5.51	502.55	719.20	5.81	530.74	503.98	6.74

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	591.13	297.43	510.85	1146.98	0.52	2.26	1.98	8.75
MEAN	17.51	606.67	313.88	519.15	1143.26	0.53	2.34	2.07	6.78
HUB	14.85	660.92	397.38	528.11	1139.81	0.58	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	661.49	627.30	364.06	0.55	5895.67	0.92	0.91		
MEAN	584.57	585.49	270.69	0.51	5498.16	0.92	0.91	0.91	1.45
HUB	495.87	537.21	98.49	0.47	5903.77	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.06	1.20	6.75	583.23	1.06	555.36	516.17	3.77
MEAN	7.97	1.19	6.59	581.11	1.05	551.76	515.70	4.12
HUB	8.07	1.20	6.44	583.28	1.06	548.44	517.29	4.46

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.21	35.48	31.50	3.98	0.93	0.38	1.40
MEAN	31.16	27.54	23.50	4.04	0.92	0.38	1.62
HUB	36.96	10.56	6.50	4.06	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	675.3282	315.9428	596.8655	1137.3955	0.5937	-0.1783	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0175	6.3380	546.1914	517.3909	4.7785	27.8939	31.5000	3.6061

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	574.8554	125.4008	561.0110	1147.7662	0.5008	0.1098	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.9944	6.7522	556.1969	515.7699	451.3937	0.0261	0.2987

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	587.2360	0.0000	587.2360	1146.5314	0.5122	0.2059	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6839	555.0359	516.0781	0.0000	0.0600	0.0412	0.0623

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8756	7.9727	1.1894	582.5072	30.7036	248.1028	1.9233

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
192670.188	0.440	626.316	539995.500	0.306900E-02

Melt Ratio at Stator LE, Throat, TE
0.23321E+00 0.30155E+00 0.50495E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.197 EfDer = 1.000 SH = 0.342235E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.524	3826.412	7.973	582.496	1.000	1.000	0.980

W Kg/sec = 26.147 Wdry = 57.327 WH2O = 0.197 lbm/sec H2O = 1.864g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
112.396	3610.765	1.377	0.251	53.459	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
101749.234	45075.063	1.557	513.330	329.708	395.845	1.201

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	475.70	-0.16	475.70	0.41	0.69	606.86
MEAN	16.97	0.00	-0.02	475.70	-0.16	475.70	0.41	0.64	
HUB	14.32	0.00	-0.02	475.70	-0.16	475.70	0.41	0.58	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.52	46.36	7.16	643.12	800.07	7.11	564.50	515.38	3.57
MEAN	50.00	43.80	6.20	566.68	740.00	7.11	564.50	515.38	3.57
HUB	45.16	37.84	7.32	478.17	674.60	7.11	564.50	515.38	3.57

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	557.68	291.73	475.29	1178.99	0.47	2.16	1.89	8.34
MEAN	16.57	569.42	301.97	482.76	1175.24	0.48	2.24	1.97	6.35
HUB	13.89	616.36	372.91	490.76	1171.71	0.53	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	630.44	583.62	338.70	0.50	5511.10	0.92	0.91		
MEAN	553.43	544.32	251.46	0.46	5007.54	0.92	0.91	0.91	1.48
HUB	463.81	499.10	90.90	0.43	5182.06	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.39	1.18	8.08	611.75	1.05	587.01	525.76	2.21
MEAN	9.26	1.16	7.90	609.08	1.05	583.29	525.06	2.40
HUB	9.31	1.17	7.73	610.01	1.05	579.79	525.91	2.58

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.54	35.47	31.50	3.97	0.93	0.40	1.40
MEAN	32.03	27.51	23.50	4.01	0.93	0.39	1.62
HUB	37.23	10.49	6.50	3.99	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	615.6907	303.6649	535.5956	1171.9895	0.5253	-0.1212	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.3051	7.7322	580.1357	526.0196	2.5888	29.5518	32.4000	2.8482

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	529.6134	118.7768	516.1225	1179.8707	0.4489	0.1425	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.2879     8.1056   587.9731   525.1302   432.2457     0.0222     0.3247

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   525.2487     0.0000   525.2487  1180.1982     0.4451     0.2359     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.1033   588.3463   525.4238     0.0000     0.0600     0.0394     0.1409

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8778     9.2635     1.1619   610.2676    27.7833   249.0408     1.9305

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 174760.359       0.440     568.096  532081.375   0.391479E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.642   EfDer =  1.000    SH =  0.505604E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     57.524    3826.412       9.264     610.266       1.000       1.000       0.980
 W Kg/sec =  26.147  Wdry =  57.233  WH2O = 0.291  lbm/sec   H2O =   3.113g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     99.012    3527.684       1.374       0.252      53.512      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  89978.656   45045.777       1.753     509.668     290.743     384.739       1.323

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   423.66    -0.15   423.66     0.36     0.63   563.96
 MEAN   15.91     0.00    -0.02   423.66    -0.15   423.66     0.36     0.57
 HUB    13.07     0.00    -0.02   423.66    -0.15   423.66     0.36     0.51

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    55.30    47.36     7.94   611.74   744.24     8.50   596.07   526.03     2.62
 MEAN   51.44    44.80     6.64   531.36   679.70     8.50   596.07   526.03     2.62
 HUB    45.86    38.84     7.02   436.43   608.35     8.50   596.07   526.03     2.62

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   518.02   293.14   427.09  1208.16     0.43     2.05     1.78     7.43
 MEAN   15.50   522.65   290.49   434.48  1203.86     0.43     2.13     1.86     5.75
 HUB    12.59   557.18   338.90   442.27  1199.73     0.46     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   599.05   525.35   305.91     0.43  5261.59     0.92     0.91
 MEAN  517.49   490.21   227.00     0.41  4504.30     0.92     0.91     0.91     1.52
 HUB   420.40   449.72    81.50     0.37  4268.64     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.76     1.16     9.50   638.06     1.05   616.83   535.79     1.91
 MEAN   10.54     1.14     9.28   634.06     1.04   612.45   534.69     2.08
 HUB    10.47     1.13     9.05   632.82     1.04   608.26   534.72     2.25

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    34.46    35.61    31.50     4.11     0.93     0.43     1.40
 MEAN   33.77    27.59    23.50     4.09     0.93     0.41     1.64
 HUB    37.46    10.44     6.50     3.94     0.93     0.40     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   582.1994   295.8217   501.4436  1199.5399     0.4854    -0.1995     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.5614     9.0148   608.2124   535.7182     2.2876    30.5381    33.0000     2.4619
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   506.4637   115.6514   493.0824  1205.9325     0.4200     0.0566     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.5349     9.3512   614.7300   534.9374   410.5396     0.0402     0.3413

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   490.5074     0.0000   490.5074  1207.1168     0.4063     0.2643     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.4236   615.9953   535.2488     0.0000     0.0600     0.0387     0.1118

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8790    10.5369     1.1375   634.9806    24.7157   254.3984     1.9721

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 156495.703       0.436     508.723  539600.125   0.618368E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3286   Tt4 =   634.9806   T1  =   477.9148

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    985445.81   3203.4050    190.3293      2.4708      0.8548      4.2635     1.3286     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 79.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.725   EfDer =  0.996    SH =  0.734100E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     56.189    3780.265       4.265     477.915       1.000       1.000       0.980
 W Kg/sec =  25.540  Wdry =  56.148  WH2O = 0.041  lbm/sec   H2O =   0.260g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     185.913    3938.243       1.381       0.249      53.372      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 152800.797   44076.039       1.527     831.557     544.409     619.754       1.138

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   441.01    -0.15   441.01     0.42     0.77   708.98
 MEAN    17.06     0.00    -0.02   441.01    -0.15   441.01     0.42     0.68
 HUB     12.51     0.00    -0.02   441.01    -0.15   441.01     0.42     0.58

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.06    50.47     6.59   680.56   811.09     3.78   462.30   463.95    17.96
 MEAN    51.93    47.20     4.73   562.80   715.12     3.78   462.30   463.95    17.96
 HUB     43.11    38.62     4.49   412.69   604.09     3.78   462.30   463.95    17.97

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   679.37   369.88   569.85  1068.22      0.64     7.29     6.52    16.04
 MEAN    18.04   718.05   415.39   585.70  1062.58      0.68     7.43     6.80    12.53
 HUB     15.00   833.35   556.51   620.30  1051.55      0.79     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    680.56   649.04   310.69     0.61  7633.71      0.92     0.91
 MEAN   594.99   612.62   179.60     0.58  7494.63      0.92     0.91     0.91     1.29
 HUB    494.84   623.36    61.67     0.59  8349.48      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.58     1.31     4.27   518.35     1.08   481.29   488.53    11.80
 MEAN     5.56     1.30     4.11   517.61     1.08   476.22   489.18    14.12
 HUB      5.72     1.34     3.80   522.14     1.09   466.39   495.00    20.20

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.99    28.60    24.20     4.40     0.93     0.33     1.80
 MEAN    35.35    17.05    12.70     4.35     0.92     0.28     2.22
 HUB     41.90    -5.68    -9.30     3.62     0.92     0.13     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.996       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   763.9448   414.5860   641.6620  1058.4299     0.7218    -0.0828     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.6042     3.9776   472.5507   491.4481    16.6317    32.8670    35.4000     2.5330

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   605.6283   148.1552   587.2271  1077.7102     0.5620     0.2898     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5730     4.5099   489.9490   487.8853   554.9116     0.0300     0.4059

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   602.0840     0.0000   602.0840  1078.0471     0.5585     0.3215     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.5006   490.3018   488.5205     0.0000     0.0600     0.0465     0.2838
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8656     5.5472     1.3008   519.3649    41.4524   224.8604     1.7431

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 258404.609       0.558     820.511  612608.000   0.125019E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.751   EfDer =  0.999    SH =  0.193851E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     56.189    3780.265       5.547     519.364       1.000       1.000       0.980
 W Kg/sec =  25.540  Wdry =  56.080  WH2O = 0.109  lbm/sec   H2O =   0.795g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    148.995    3777.844       1.379       0.250      53.411      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 131932.844   44055.141       1.352     590.487     436.617     468.502       1.073

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   536.19    -0.18   536.19     0.49     0.80   677.47
 MEAN    18.08     0.00    -0.02   536.19    -0.18   536.19     0.49     0.74
 HUB     15.21     0.00    -0.02   536.19    -0.18   536.19     0.49     0.68

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.67    46.36     5.31   677.92   864.49     4.70   496.38   489.96    13.73
 MEAN    48.05    42.30     5.75   596.38   802.12     4.70   496.38   489.96    13.73
 HUB     43.11    37.84     5.27   501.76   734.48     4.70   496.38   489.96    13.73

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   606.72   298.10   528.43  1112.25      0.55     2.33     2.04     9.02
 MEAN    18.01   623.46   314.59   538.27  1108.12      0.56     2.40     2.13     7.35
 HUB     15.22   679.70   401.01   548.80  1104.32      0.62     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    673.64   648.28   375.54     0.58  6090.98      0.92     0.91
 MEAN   594.13   606.53   279.54     0.55  5669.09      0.92     0.91     0.91     1.43
 HUB    502.19   558.05   101.19     0.51  6107.34      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.78     1.22     5.55   551.50     1.06   522.06   503.91     6.68
 MEAN     6.69     1.21     5.41   549.27     1.06   518.19   503.42     7.47
 HUB      6.78     1.22     5.27   551.58     1.06   514.64   505.40     8.27

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.43    35.40    31.50     3.90     0.93     0.37     1.40
 MEAN    30.30    27.44    23.50     3.94     0.92     0.36     1.63
 HUB     36.16    10.45     6.50     3.95     0.92     0.38     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   699.1879   315.4728   623.9717  1101.1228     0.6350    -0.1920     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7340     5.1517   511.7176   505.7137     9.1606    26.8206    30.6000     3.7794

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   587.3621   124.5249   574.0103  1113.4248     0.5275     0.1168     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.7097     5.5656   523.2161   503.4477   491.5697     0.0282     0.2809

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   615.9294     0.0000   615.9294  1110.4766     0.5547     0.1833     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4417	520.4763	504.2848	0.0000	0.0600	0.0450	0.0243

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8702	6.6872	1.2055	550.7825	31.4191	256.4640	1.9881

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
196613.172	0.433	624.305	550849.875	0.230235E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.108 EfDer = 0.999 SH = 0.282032E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.189	3780.265	6.687	550.781	1.000	1.000	0.980

W Kg/sec = 25.540 Wdry = 56.031 WH2O = 0.158 lbm/sec H2O = 1.344g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
127.279	3668.515	1.378	0.251	53.440	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
113602.445	44039.785	1.462	545.479	373.205	424.468	1.137

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	499.80	-0.17	499.80	0.45	0.74	642.50
MEAN	17.74	0.00	-0.02	499.80	-0.17	499.80	0.45	0.69	
HUB	15.05	0.00	-0.02	499.80	-0.17	499.80	0.45	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.96	46.36	6.60	662.09	829.69	5.85	530.87	503.71	7.02
MEAN	49.51	43.40	6.11	585.18	769.70	5.85	530.87	503.71	7.02
HUB	44.82	38.84	5.98	496.48	704.61	5.85	530.87	503.71	7.02

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	580.38	299.49	497.14	1146.74	0.51	2.26	1.98	8.75
MEAN	17.51	595.07	314.29	505.30	1142.97	0.52	2.34	2.07	6.78
HUB	14.85	647.82	394.21	514.07	1139.46	0.57	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	653.51	610.32	354.03	0.53	5936.29	0.92	0.91		
MEAN	577.52	569.76	263.24	0.50	5505.11	0.92	0.91	0.91	1.46
HUB	489.89	522.90	95.68	0.46	5856.55	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.04	1.20	6.77	582.00	1.06	555.15	515.93	3.95
MEAN	7.94	1.19	6.62	579.73	1.05	551.50	515.41	4.32
HUB	8.02	1.20	6.46	581.58	1.06	548.13	516.87	4.69

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.07	35.46	31.50	3.96	0.93	0.39	1.40
MEAN	31.88	27.52	23.50	4.02	0.93	0.39	1.62
HUB	37.48	10.54	6.50	4.04	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	660.3975	316.3479	579.6971	1137.5498	0.5805	-0.1723	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9858	6.3766	546.3566	517.0122	4.9572	28.6218	31.5000	2.8782

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	558.3961	121.8103	544.9481	1147.8076	0.4865	0.1270	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.9656	6.7911	556.2557	515.3991	451.3937	0.0245	0.3090

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   570.0964     0.0000   570.0964  1146.6692     0.4972     0.2180     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.7273   555.1876   515.6920     0.0000     0.0600     0.0394     0.0810

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8788     7.9450     1.1881   581.0703    30.3237   243.8353     1.8902

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 190347.688       0.446     604.410  525270.375   0.317594E-02

Melt Ratio at Stator LE, Throat, TE
0.24884E+00 0.32075E+00 0.53289E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 6.603   EfDer =  1.000    SH =  0.352825E-02

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     56.189    3780.265       7.945     581.059       1.000       1.000       0.980
 W Kg/sec =  25.540  Wdry =  55.991  WH2O = 0.198  lbm/sec   H2O =   1.927g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    110.035    3571.626       1.377       0.251      53.463      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  99080.922   44027.430       1.590     513.330     322.805     395.845       1.226

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   463.22    -0.16   463.22     0.40     0.68   600.28
 MEAN    16.97     0.00    -0.02   463.22    -0.16   463.22     0.40     0.63
 HUB     14.32     0.00    -0.02   463.22    -0.16   463.22     0.40     0.57

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.91    46.36     7.55   635.37   786.43     7.12   564.00   515.06     3.74
 MEAN    50.40    43.80     6.60   559.85   726.76     7.12   564.00   515.06     3.74
 HUB     45.57    37.84     7.73   472.40   661.73     7.12   564.00   515.06     3.74

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   548.18   292.77   463.45  1178.12     0.47     2.16     1.89     8.34
 MEAN    16.57   559.14   301.74   470.73  1174.36     0.48     2.24     1.97     6.35
 HUB     13.89   604.72   369.74   478.52  1170.82     0.52     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    622.83   568.97   330.06     0.48  5530.65     0.92     0.91
 MEAN   546.76   530.68   245.01     0.45  5003.79     0.92     0.91     0.91     1.49
 HUB    458.22   486.63    88.48     0.42  5137.95     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.35     1.18     8.08   610.06     1.05   586.16   525.43     2.34
 MEAN     9.21     1.16     7.91   607.29     1.05   582.43   524.69     2.53
 HUB      9.25     1.16     7.73   608.00     1.05   578.92   525.46     2.73

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.28    35.46    31.50     3.96     0.93     0.41     1.40
 MEAN    32.66    27.50    23.50     4.00     0.93     0.40     1.62
 HUB     37.69    10.48     6.50     3.98     0.93     0.41     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m        C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   603.5528   303.4418   521.7270  1171.3245     0.5153    -0.1180     2.1803

    Pt3         Ps3        Ts3        TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.2573     7.7456   579.4935   525.6389     2.7311    30.1827    32.4000     2.2173

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth         Cuth       Cmth      Aoth          Machth     cp 2-Th     Stat Chord
   16.4812   515.8373   115.6872   502.6973  1179.1746     0.4375     0.1566     2.2705
```

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.2421	8.1202	587.2985	524.7449	432.2457	0.0211	0.3336

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	511.5976	0.0000	511.5976	1179.4818	0.4337	0.2461	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1175	587.6520	525.0504	0.0000	0.0600	0.0383	0.1546

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8795	9.2187	1.1603	608.4409	27.3898	245.3415	1.9019

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
172341.219	0.444	547.235	518549.531	0.405421E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.983 EfDer = 1.000 SH = 0.522591E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.189	3780.265	9.219	608.439	1.000	1.000	0.980

W Kg/sec = 25.540 Wdry = 55.895 WH2O = 0.294 lbm/sec H2O = 3.221g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
97.040	3490.368	1.374	0.253	53.518	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
87813.445	43997.691	1.788	509.668	284.979	384.739	1.350

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	413.46	-0.14	413.46	0.35	0.62	558.00
MEAN	15.91	0.00	-0.02	413.46	-0.14	413.46	0.35	0.56	
HUB	13.07	0.00	-0.02	413.46	-0.14	413.46	0.35	0.50	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.63	47.36	8.27	604.36	732.38	8.49	594.92	525.71	2.79
MEAN	51.78	44.80	6.98	524.95	668.34	8.49	594.92	525.71	2.79
HUB	46.21	38.84	7.37	431.17	597.48	8.49	594.92	525.71	2.79

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	509.96	293.05	417.35	1206.64	0.42	2.05	1.78	7.43
MEAN	15.50	513.87	289.60	424.50	1202.39	0.43	2.13	1.86	5.75
HUB	12.59	547.18	335.81	432.02	1198.29	0.46	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	591.82	513.27	298.77	0.43	5259.94	0.92	0.91		
MEAN	511.25	478.88	221.65	0.40	4490.33	0.92	0.91	0.91	1.53
HUB	415.33	439.28	79.53	0.37	4229.65	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.69	1.16	9.48	635.88	1.05	615.32	535.43	2.05
MEAN	10.47	1.14	9.25	631.87	1.04	610.98	534.32	2.22
HUB	10.39	1.13	9.03	630.51	1.04	606.83	534.31	2.40

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	35.08	35.60	31.50	4.10	0.93	0.44	1.40
MEAN	34.30	27.57	23.50	4.07	0.93	0.41	1.64
HUB	37.86	10.43	6.50	3.93	0.93	0.40	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	571.3842	294.9077	489.3970	1198.2998	0.4768	-0.1960	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.4930	9.0051	606.9794	535.3283	2.4330	31.0729	33.0000	1.9271

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   494.1711   112.8444   481.1146  1204.6804     0.4102     0.0711     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4693     9.3435   613.4796   534.5333   410.5396     0.0387     0.3487

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   478.7984     0.0000   478.7984  1205.7914     0.3971     0.2727     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.4108   614.6689   534.8580     0.0000     0.0600     0.0379     0.1243

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8801    10.4704     1.1358   632.7491    24.3109   251.2858     1.9480

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 154011.172       0.440     489.031  526808.750   0.638238E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3240   Tt4 =   632.7491   T1  =   477.9146

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    971717.94   3085.4929    185.9135      2.4552      0.8600      4.7254      1.3240     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 76.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.075   EfDer =  0.997    SH =  0.748651E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     55.226    3748.905       4.265     477.915       1.000       1.000       0.980
  W Kg/sec =  25.103  Wdry =  55.184  WH2O = 0.041  lbm/sec   H2O =   0.266g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     182.726   3905.573       1.381       0.249      53.373      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 149637.422   43320.004       1.554     831.557     535.079     619.754       1.158

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   431.88    -0.15   431.88     0.41     0.76   703.10
 MEAN    17.06     0.00    -0.02   431.88    -0.15   431.88     0.41     0.67
 HUB     12.51     0.00    -0.02   431.88    -0.15   431.88     0.41     0.57

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.39    50.47     6.92   674.92   801.39     3.80   462.94   463.94    17.88
 MEAN    52.27    47.20     5.07   558.13   705.83     3.80   462.94   463.94    17.88
 HUB     43.47    38.62     4.85   409.27   595.10     3.80   462.94   463.94    17.88

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   669.50   371.21   557.17  1069.19      0.63     7.29     6.52    16.04
 MEAN    18.04   706.90   414.53   572.60  1063.54      0.66     7.43     6.80    12.53
 HUB     15.00   818.30   550.85   605.13  1052.88      0.78     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    674.92   634.57   303.71     0.59  7661.19      0.92     0.91
 MEAN   590.06   598.90   175.53     0.56  7478.96      0.92     0.91     0.91     1.31
 HUB    490.73   608.11    60.12     0.58  8264.62      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.58     1.31     4.30   518.16     1.08   482.17   488.38    11.71
 MEAN     5.54     1.30     4.14   517.20     1.08   477.08   488.87    14.01
 HUB      5.69     1.33     3.84   521.33     1.09   467.57   494.25    19.79

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.67    28.59    24.20     4.39     0.93     0.34     1.80
 MEAN    35.90    17.04    12.70     4.34     0.92     0.29     2.22
 HUB     42.31    -5.67    -9.30     3.63     0.92     0.14     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   750.5278   413.7220   626.1997  1059.7203     0.7082    -0.0796     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.5895     4.0159   473.7108   491.0035    16.3314    33.4522    35.4000     1.9478

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   591.8445   144.7832   573.8621  1078.6395     0.5487     0.2998     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5611     4.5437   490.8013   487.6033   554.9116     0.0288     0.4136

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   587.9965     0.0000   587.9965  1078.9996     0.5449     0.3315     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.5375   491.1744   488.2470     0.0000     0.0600     0.0437     0.2956
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8700     5.5385     1.2987   518.8909    40.9785   222.5710     1.7254

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 255473.281       0.561     797.293  599925.500   0.128349E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 6.130   EfDer =  1.000    SH =  0.199406E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     55.226    3748.905       5.538     518.890       1.000       1.000       0.980
 W Kg/sec =  25.103  Wdry =  55.115  WH2O = 0.110  lbm/sec   H2O =   0.822g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    146.605    3748.215       1.379       0.250      53.413      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 129105.852   43298.762       1.374     590.487     429.628     468.502       1.090

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   524.70    -0.18   524.70     0.48     0.79   672.16
 MEAN   18.08     0.00    -0.02   524.70    -0.18   524.70     0.48     0.73
 HUB    15.21     0.00    -0.02   524.70    -0.18   524.70     0.48     0.67

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    52.04    46.36     5.68   672.30   852.96     4.73   496.88   489.77    13.92
 MEAN   48.43    42.30     6.13   591.44   790.78     4.73   496.88   489.77    13.92
 HUB    43.49    37.84     5.65   497.60   723.26     4.73   496.88   489.77    13.92

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   598.50   300.38   517.66  1112.56     0.54     2.33     2.04     9.02
 MEAN   18.01   614.56   315.51   527.39  1108.37     0.55     2.40     2.13     7.35
 HUB    15.22   669.68   399.07   537.79  1104.51     0.61     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   668.05   634.94   367.66     0.57  6137.56     0.92     0.91
 MEAN  589.20   594.18   273.69     0.54  5685.60     0.92     0.91     0.91     1.44
 HUB   498.03   546.82    98.96     0.50  6077.72     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.77     1.22     5.57   550.99     1.06   522.36   503.79     6.83
 MEAN    6.67     1.20     5.43   548.63     1.06   518.44   503.24     7.64
 HUB     6.75     1.22     5.29   550.68     1.06   514.83   505.10     8.48

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    30.13    35.38    31.50     3.88     0.93     0.38     1.40
 MEAN   30.89    27.43    23.50     3.93     0.93     0.37     1.63
 HUB    36.58    10.43     6.50     3.93     0.93     0.38     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   687.1881   316.3961   610.0172  1101.8162     0.6237    -0.1862     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   6.7173     5.1860   512.3722   505.4278     9.2560    27.4143    30.6000     3.1857

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   574.4280   121.7828   561.3702  1113.9706     0.5157     0.1308     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     6.6955     5.5991   523.7400   503.2042   491.5697     0.0268     0.2898

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   601.5042     0.0000   601.5042  1111.2400     0.5413     0.1949     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4845	521.2030	504.0087	0.0000	0.0600	0.0420	0.0427

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8744	6.6757	1.2053	550.1008	31.2114	252.8166	1.9598

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
195349.266	0.438	609.656	539051.500	0.236704E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.456 EfDer = 1.000 SH = 0.289898E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
55.226	3748.905	6.676	550.100	1.000	1.000	0.980

W Kg/sec = 25.103 Wdry = 55.066 WH2O = 0.160 lbm/sec H2O = 1.386g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
125.235	3640.336	1.378	0.251	53.442	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
111279.727	43283.270	1.485	545.479	367.230	424.468	1.156

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	489.58	-0.17	489.58	0.44	0.73	637.56
MEAN	17.74	0.00	-0.02	489.58	-0.17	489.58	0.44	0.68	
HUB	15.05	0.00	-0.02	489.58	-0.17	489.58	0.44	0.62	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.30	46.36	6.94	656.60	819.17	5.87	531.00	503.55	7.21
MEAN	49.86	43.40	6.46	580.32	759.38	5.87	531.00	503.55	7.21
HUB	45.17	38.84	6.33	492.37	694.46	5.87	531.00	503.55	7.21

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	572.97	301.15	487.45	1146.63	0.50	2.26	1.98	8.75
MEAN	17.51	587.03	314.77	495.50	1142.83	0.51	2.34	2.07	6.78
HUB	14.85	638.71	392.16	504.15	1139.28	0.56	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	648.09	598.31	346.94	0.52	5969.14	0.92	0.91		
MEAN	572.73	558.63	257.96	0.49	5513.55	0.92	0.91	0.91	1.47
HUB	485.82	512.77	93.66	0.45	5826.15	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.03	1.20	6.78	581.22	1.06	555.06	515.79	4.07
MEAN	7.92	1.19	6.63	578.85	1.05	551.38	515.22	4.46
HUB	7.99	1.20	6.48	580.48	1.06	547.96	516.60	4.85

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.71	35.44	31.50	3.94	0.93	0.40	1.40
MEAN	32.43	27.50	23.50	4.00	0.93	0.39	1.62
HUB	37.88	10.52	6.50	4.02	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	650.0748	316.8368	567.6370	1137.7070	0.5714	-0.1681	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9637	6.4026	546.5202	516.7716	5.0807	29.1689	31.5000	2.3311

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	546.8149	119.2840	533.6458	1147.8998	0.4764	0.1397	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.9454	6.8176	556.3586	515.1611	451.3937	0.0236	0.3168

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	558.0729	0.0000	558.0729	1146.8232	0.4866	0.2268	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7567	555.3503	515.4432	0.0000	0.0600	0.0385	0.0946

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8806	7.9253	1.1872	580.1469	30.0836	240.7164	1.8660

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
188884.813	0.450	589.481	514751.438	0.325504E-02

Melt Ratio at Stator LE, Throat, TE
0.26131E+00 0.33591E+00 0.55464E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.911 EfDer = 1.000 SH = 0.360647E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
55.226	3748.905	7.925	580.135	1.000	1.000	0.980

W Kg/sec = 25.103 Wdry = 55.026 WH2O = 0.199 lbm/sec H2O = 1.974g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
108.331	3544.815	1.376	0.251	53.465	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
97190.461	43271.133	1.615	513.330	317.822	395.845	1.245

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	454.38	-0.16	454.38	0.39	0.67	595.78
MEAN	16.97	0.00	-0.02	454.38	-0.16	454.38	0.39	0.62	
HUB	14.32	0.00	-0.02	454.38	-0.16	454.38	0.39	0.56	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.21	46.36	7.85	630.10	776.97	7.14	563.72	514.85	3.86
MEAN	50.71	43.80	6.91	555.20	717.56	7.14	563.72	514.85	3.86
HUB	45.88	37.84	8.04	468.48	652.75	7.14	563.72	514.85	3.86

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	541.61	293.77	455.01	1177.60	0.46	2.16	1.89	8.34
MEAN	16.57	551.98	301.80	462.17	1173.84	0.47	2.24	1.97	6.35
HUB	13.89	596.57	367.65	469.82	1170.28	0.51	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	617.67	558.52	323.89	0.47	5549.45	0.92	0.91		
MEAN	542.22	520.96	240.42	0.44	5004.70	0.92	0.91	0.91	1.50
HUB	454.42	477.76	86.77	0.41	5108.87	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.33	1.18	8.08	608.98	1.05	585.66	525.23	2.43
MEAN	9.18	1.16	7.91	606.15	1.04	581.93	524.47	2.63
HUB	9.21	1.16	7.73	606.69	1.05	578.40	525.17	2.84

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.85	35.44	31.50	3.94	0.93	0.41	1.40
MEAN	33.15	27.48	23.50	3.98	0.93	0.40	1.62
HUB	38.04	10.46	6.50	3.96	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	595.0948	303.5004	511.8841	1170.9485	0.5082	-0.1157	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.2244	7.7547	579.1344	525.4022	2.8320	30.6641	32.4000	1.7359

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	506.0493	113.4921	493.1587	1178.7871	0.4293	0.1672	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.2104	8.1307	586.9275	524.5016	432.2457	0.0205	0.3405

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	501.8990	0.0000	501.8990	1179.0801	0.4257	0.2538	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1277	587.2672	524.8156	0.0000	0.0600	0.0376	0.1649

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8805	9.1876	1.1593	607.2696	27.1402	242.5886	1.8805

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
170813.531	0.448	533.083	508799.000	0.415926E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 7.246 EfDer = 1.000 SH = 0.535603E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
55.226	3748.905	9.188	607.268	1.000	1.000	0.980

W Kg/sec = 25.103 Wdry = 54.930 WH2O = 0.296 lbm/sec H2O = 3.302g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
95.606	3464.749	1.374	0.253	53.522	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
86266.695	43241.000	1.815	509.668	280.791	384.739	1.370

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	406.18	-0.14	406.18	0.34	0.61	553.90
MEAN	15.91	0.00	-0.02	406.18	-0.14	406.18	0.34	0.56	
HUB	13.07	0.00	-0.02	406.18	-0.14	406.18	0.34	0.50	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.88	47.36	8.52	599.35	724.13	8.48	594.23	525.52	2.91
MEAN	52.05	44.80	7.25	520.60	660.42	8.48	594.23	525.52	2.91
HUB	46.48	38.84	7.64	427.59	589.86	8.48	594.23	525.52	2.91

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	504.38	293.27	410.35	1205.71	0.42	2.05	1.78	7.43
MEAN	15.50	507.74	289.19	417.33	1201.48	0.42	2.13	1.86	5.75
HUB	12.59	540.15	333.78	424.68	1197.40	0.45	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	586.91	504.60	293.65	0.42	5263.80	0.92	0.91		
MEAN	507.01	470.75	217.82	0.39	4484.04	0.92	0.91	0.91	1.54
HUB	411.89	431.81	78.11	0.36	4204.13	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.65	1.16	9.46	634.49	1.04	614.38	535.22	2.14
MEAN	10.42	1.13	9.24	630.46	1.04	610.08	534.09	2.32
HUB	10.34	1.13	9.02	629.01	1.04	605.95	534.05	2.51

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	35.55	35.59	31.50	4.09	0.93	0.45	1.40
MEAN	34.72	27.56	23.50	4.06	0.93	0.42	1.64
HUB	38.17	10.42	6.50	3.92	0.93	0.41	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	563.8032	294.4969	480.7761	1197.5493	0.4708	-0.1933	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.4465	8.9992	606.2385	535.0914	2.5369	31.4893	33.0000	1.5107

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   485.3670   110.8340   472.5431  1203.9316     0.4032     0.0821     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4246     9.3393   612.7375   534.2847   410.5396     0.0377     0.3546

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   470.4000     0.0000   470.4000  1204.9918     0.3904     0.2792     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.4033   613.8747   534.6203     0.0000     0.0600     0.0374     0.1339

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8807    10.4250     1.1347   631.3190    24.0521   248.9135     1.9296

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 152431.828       0.443     475.717  517516.594   0.653686E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.3210   Tt4 =   631.3190   T1  =   477.9145

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    962952.69   3005.2300    182.7255      2.4446      0.8631      5.0749      1.3210     37.3740
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10µm, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.856   EfDer =  0.984    SH =  0.116753E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     63.048    3888.739       4.265     457.735       1.000       1.000       0.980
  W Kg/sec =  28.658  Wdry =  63.041  WH2O = 0.007  lbm/sec   H2O =   0.042g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     204.152    4139.589       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 168033.281   49468.547       1.392     831.557     597.590     619.754       1.037

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   484.97    -0.17   484.97     0.48     0.84   745.23
 MEAN    17.06     0.00    -0.02   484.97    -0.17   484.97     0.48     0.74
 HUB     12.51     0.00    -0.02   484.97    -0.17   484.97     0.48     0.63

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.30     50.47     4.83   700.09    851.80     3.66   438.82   448.93     8.78
 MEAN    50.06     47.20     2.86   578.95    755.36     3.66   438.82   448.93     8.78
 HUB     41.21     38.62     2.59   424.53    644.64     3.66   438.82   448.93     8.78

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   727.47   353.23   635.96  1038.69     0.70     7.29     6.52    16.04
 MEAN    18.04   772.56   411.47   653.87  1033.30     0.75     7.43     6.80    12.53
 HUB     15.00   913.32   579.93   705.58  1019.30     0.90     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    700.09   724.40   346.86     0.70  7290.67     0.92     0.90
 MEAN   612.06   683.95   200.59     0.66  7424.13     0.92     0.90     0.90     1.21
 HUB    509.03   709.13    70.90     0.70  8701.05     0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.60     1.31     4.05   497.53     1.09   454.97   475.06     5.42
 MEAN     5.63     1.32     3.90   498.26     1.09   450.26   475.85     6.56
 HUB      5.89     1.38     3.52   505.23     1.10   438.14   481.56    10.94

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.05    28.61    24.20     4.41     0.93     0.26     1.80
 MEAN    32.18    17.05    12.70     4.35     0.91     0.22     2.22
 HUB     39.42    -5.74    -9.30     3.56     0.91     0.06     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.984       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   835.5209   410.6706   727.6296  1026.3264     0.8141    -0.1080     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.6906     3.6978   444.1965   477.7482     8.6993    29.4402    35.4000     5.9598

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   680.6235   166.5013   659.9437  1047.9094     0.6495     0.2278     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.6296     4.2537   463.0866   476.1745   554.9116     0.0423     0.3585

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   682.8517     0.0000   682.8517  1047.6053     0.6518     0.2525     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.2010	462.8475	476.1836	0.0000	0.0600	0.0737	0.1998

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8221	5.5704	1.3062	500.3397	42.6070	238.0831	1.8456

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
264915.938	0.541	943.873	726828.875	0.171088E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.469 EfDer = 0.989 SH = 0.245431E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.048	3888.739	5.570	500.339	1.000	1.000	0.980

W Kg/sec = 28.658 Wdry = 63.033 WH2O = 0.015 lbm/sec H2O = 0.101g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
163.409	3959.446	1.381	0.249	53.356	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
146996.813	49466.051	1.234	590.487	478.373	468.502	0.979

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	597.45	-0.21	597.45	0.56	0.87	710.04
MEAN	18.08	0.00	-0.02	597.45	-0.21	597.45	0.56	0.81	
HUB	15.21	0.00	-0.02	597.45	-0.21	597.45	0.56	0.75	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.42	46.36	3.06	697.38	918.46	4.50	471.65	476.23	4.68
MEAN	45.77	42.30	3.47	613.50	856.49	4.50	471.65	476.23	4.68
HUB	40.84	37.84	3.00	516.16	789.68	4.50	471.65	476.23	4.68

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	647.63	274.73	586.47	1085.82	0.60	2.33	2.04	9.02
MEAN	18.01	667.42	300.21	596.09	1082.31	0.62	2.40	2.13	7.35
HUB	15.22	728.65	403.49	606.73	1079.18	0.68	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	692.97	720.33	418.24	0.66	5614.17	0.92	0.90		
MEAN	611.18	672.32	310.96	0.62	5410.57	0.92	0.90	0.90	1.37
HUB	516.60	617.18	113.11	0.57	6145.45	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.77	1.22	5.34	530.97	1.06	497.25	491.55	2.02
MEAN	6.73	1.21	5.22	529.86	1.06	494.05	491.13	2.24
HUB	6.90	1.24	5.10	533.86	1.07	491.19	493.27	2.45

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.10	35.49	31.50	3.99	0.93	0.32	1.40
MEAN	26.73	27.55	23.50	4.05	0.92	0.32	1.63
HUB	33.62	10.56	6.50	4.06	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.989	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	765.7443	301.0570	704.0802	1071.7021	0.7145	-0.2376	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7819	4.8444	484.4391	492.5258	3.1291	23.1510	30.6000	7.4490

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	661.9744	140.3433	646.9265	1084.8011	0.6102	0.0199	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7313	5.2506	496.3435	491.7730	491.5697	0.0421	0.2201

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	705.1792	0.0000	705.1792	1079.5847	0.6532	0.0965	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0315	491.6000	491.9714	0.0000	0.0600	0.0752	-0.1189

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8229	6.6790	1.1990	531.5606	31.2231	280.9856	2.1782

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
194285.203	0.405	692.222	657878.813	0.284968E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.845 EfDer = 0.992 SH = 0.349951E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.048	3888.739	6.679	531.560	1.000	1.000	0.980

W Kg/sec = 28.658 Wdry = 63.026 WH2O = 0.022 lbm/sec H2O = 0.168g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
140.474	3841.408	1.381	0.249	53.360	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
126536.156	49464.020	1.326	545.479	411.275	424.468	1.032

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	556.73	-0.19	556.73	0.51	0.80	672.78
MEAN	17.74	0.00	-0.02	556.73	-0.19	556.73	0.51	0.75	
HUB	15.05	0.00	-0.02	556.73	-0.19	556.73	0.51	0.69	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.74	46.36	4.38	681.09	879.82	5.61	506.66	491.56	1.99
MEAN	47.24	43.40	3.84	601.97	820.09	5.61	506.66	491.56	1.99
HUB	42.54	38.84	3.70	510.73	755.64	5.61	506.66	491.56	1.99

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	618.03	277.83	552.06	1121.88	0.55	2.26	1.98	8.75
MEAN	17.51	635.92	301.05	560.14	1118.62	0.57	2.34	2.07	6.78
HUB	14.85	693.85	396.94	569.09	1115.67	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	672.27	678.49	394.44	0.60	5507.63	0.92	0.91		
MEAN	594.10	632.17	293.04	0.57	5273.83	0.92	0.91	0.91	1.40
HUB	503.94	579.06	107.00	0.52	5897.51	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.01	1.20	6.53	561.59	1.06	530.90	504.65	1.05
MEAN	7.95	1.19	6.40	560.31	1.05	527.83	504.20	1.14
HUB	8.11	1.21	6.27	563.71	1.06	525.04	505.79	1.23

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.71	35.54	31.50	4.04	0.93	0.34	1.40
MEAN	28.26	27.62	23.50	4.12	0.92	0.34	1.62
HUB	34.90	10.65	6.50	4.15	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	717.5737	303.0303	650.4495	1110.8074	0.6460	-0.2056	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0032	6.0655	520.5186	505.1755	1.4293	24.9798	31.5000	6.5202

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	627.4549	136.8750	612.3438	1121.1547	0.5597	0.0344	2.3726

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.9624     6.4540   530.2521   504.7160   451.3937     0.0352     0.2534

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   644.7041     0.0000   644.7041  1119.2692     0.5760     0.1436     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3437   528.4936   504.7712     0.0000     0.0600     0.0604    -0.0335

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8446     7.9214     1.1860   561.8704    30.3115   266.4225     2.0653

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 188739.234       0.418     672.462  621682.938   0.421862E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 4.434   EfDer =  0.995    SH =  0.535832E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     63.048    3888.739       7.921     561.870       1.000       1.000       0.980
 W Kg/sec =  28.658  Wdry =  63.015  WH2O = 0.034  lbm/sec   H2O =   0.296g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    121.772    3736.361       1.380       0.249      53.366      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 110039.742   49460.410       1.440     513.330     356.576     395.845       1.110

ROTOR LEADING EDGE CONDITIONS, STAGE   4

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    19.26     0.00    -0.02   514.47    -0.18   514.47     0.45     0.73   627.97
 MEAN   16.97     0.00    -0.02   514.47    -0.18   514.47     0.45     0.68
 HUB    14.32     0.00    -0.02   514.47    -0.18   514.47     0.45     0.63

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    51.80    46.36     5.44   653.60   831.93     6.89   540.63   504.65     1.14
 MEAN   48.23    43.80     4.43   575.91   772.37     6.89   540.63   504.65     1.14
 HUB    43.38    37.84     5.54   485.96   707.82     6.89   540.63   504.65     1.14

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    18.88   581.79   274.15   513.15  1155.09     0.50     2.16     1.89     8.34
 MEAN   16.57   596.20   290.41   520.69  1151.66     0.52     2.24     1.97     6.35
 HUB    13.89   647.00   372.69   528.88  1148.47     0.56     2.26     2.10     4.19

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   640.70   630.62   366.56     0.55  5179.36     0.92     0.91
 MEAN  562.45   587.47   272.04     0.51  4816.22     0.92     0.91     0.91     1.42
 HUB   471.37   538.01    98.68     0.47  5179.15     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     9.32     1.18     7.85   590.08     1.05   562.92   515.71     0.70
 MEAN    9.21     1.16     7.69   588.10     1.05   559.58   515.03     0.75
 HUB     9.32     1.18     7.53   590.08     1.05   556.48   515.92     0.81

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    28.11    35.54    31.50     4.04     0.93     0.36     1.40
 MEAN   29.15    27.58    23.50     4.08     0.92     0.35     1.62
 HUB    35.17    10.57     6.50     4.07     0.92     0.37     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.995       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   649.8551   292.0426   580.5366  1147.4423     0.5664    -0.1370     2.1803

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.2654     7.4739   555.5383   515.6780     0.8399    26.7050    32.4000     5.6950
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   575.5536   129.0798   560.8925  1154.9623     0.4983     0.0755     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.2355     7.8113   562.8420   515.3838   432.2457     0.0288     0.2834

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   570.9680     0.0000   570.9680  1155.3676     0.4942     0.1862     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.8075   563.2630   515.3502     0.0000     0.0600     0.0475     0.0731

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8620     9.2058     1.1621   589.4143    27.5516   266.6895     2.0674

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 171726.563       0.418     611.847  608769.000   0.615786E-03

Melt Ratio at Stator LE, Throat, TE
0.67497E-01 0.86653E-01 0.14104E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.039   EfDer =  0.997    SH =  0.710325E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     63.048    3888.739       9.206     589.412       1.000       1.000       0.980
 W Kg/sec =  28.658  Wdry =  63.004  WH2O = 0.045  lbm/sec   H2O =   0.446g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    107.320    3648.014       1.380       0.249      53.371      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  96805.516   49457.023       1.622     509.668     314.314     384.739       1.224

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   455.85    -0.16   455.85     0.39     0.66   583.20
 MEAN    15.91     0.00    -0.02   455.85    -0.16   455.85     0.39     0.61
 HUB     13.07     0.00    -0.02   455.85    -0.16   455.85     0.39     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.76    47.36     6.40   621.70   771.04     8.30   572.75   515.25     0.68
 MEAN    49.84    44.80     5.04   540.02   706.81     8.30   572.75   515.25     0.68
 HUB     44.23    38.84     5.39   443.54   636.13     8.30   572.75   515.25     0.68

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   537.07   279.65   458.52  1186.01     0.45     2.05     1.78     7.43
 MEAN    15.50   544.81   281.59   466.40  1181.78     0.46     2.13     1.86     5.75
 HUB     12.59   583.50   339.27   474.72  1177.76     0.50     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    608.81   564.43   329.15     0.48  5019.88     0.92     0.91
 MEAN   525.92   526.52   244.33     0.45  4366.50     0.92     0.91     0.91     1.47
 HUB    427.25   482.81    87.98     0.41  4273.49     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.70     1.16     9.31   616.72     1.05   593.60   525.12     0.45
 MEAN    10.50     1.14     9.09   613.17     1.04   589.37   523.92     0.49
 HUB     10.47     1.14     8.87   612.66     1.04   585.36   523.85     0.53

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.38    35.67    31.50     4.17     0.93     0.40     1.40
 MEAN    31.12    27.65    23.50     4.15     0.92     0.38     1.64
 HUB     35.55    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   612.1856   286.7558   540.8718  1176.4740     0.5204    -0.2175     2.0437
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    Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
   10.5250     8.7722   584.1436   524.3993     0.5508    27.9313    33.0000     5.0687

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth        Cuth       Cmth       Aoth          Machth     cp 2-Th     Stat Chord
   15.2185   548.2115   125.1846   533.7272  1182.4520     0.4636    -0.0198     2.1315

   BlockageTh  PtTh       PsTh       TsTh       TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4803     9.0622   590.0903   524.1418   410.5396     0.0505     0.3042

    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4        Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   529.7126     0.0000   529.7126  1184.0188     0.4474     0.2205     0.5109

   Blockage4   Ps4      Ts4        TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.1587   591.6819   524.1426     0.0000     0.0600     0.0453     0.0461

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
    0.8699    10.4880     1.1393   614.1690    24.7730   270.6994     2.0984

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 154559.906       0.417     550.684  612962.938   0.770957E-03

Melt Ratio at Stator LE, Throat, TE
0.34604E+00 0.37703E+00 0.46726E+00
 trTOT =     1.3418   Tt4 =   614.1690   T1  =   457.7348

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    974226.88   3471.0891    204.1520      2.4592      0.8238      2.8561      1.3418     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 84.0%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.097   EfDer =  0.993    SH =  0.125272E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     58.884    3728.968       4.265     457.734       1.000       1.000       0.980
 W Kg/sec =  26.766  Wdry =  58.877  WH2O = 0.007  lbm/sec   H2O =   0.046g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     190.669    3969.513       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 154163.641   46201.258       1.490     831.557     558.127     619.754       1.110

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   444.94    -0.15   444.94     0.43     0.79   714.61
 MEAN    17.06     0.00    -0.02   444.94    -0.15   444.94     0.43     0.70
 HUB     12.51     0.00    -0.02   444.94    -0.15   444.94     0.43     0.59

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.47    50.47     6.00   671.33   805.52      3.75   441.81   448.88     8.27
 MEAN    51.30    47.20     4.10   555.16   711.58      3.75   441.81   448.88     8.27
 HUB     42.47    38.62     3.85   407.09   603.18      3.75   441.81   448.88     8.27

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   679.04   356.11   578.16  1043.41      0.65     7.29     6.52    16.04
 MEAN    18.04   718.72   404.78   593.90  1038.05      0.69     7.43     6.80    12.53
 HUB     15.00   837.65   550.96   630.96  1026.75      0.82     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    671.33   658.51   315.21     0.63  7349.80      0.92     0.91
 MEAN   586.92   621.20   182.14     0.60  7303.21      0.92     0.91     0.91     1.26
 HUB    488.12   634.08    62.84     0.62  8266.33      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.57     1.31     4.20   496.20     1.08   459.12   474.18     5.06
 MEAN     5.56     1.30     4.05   495.96     1.08   454.42   474.33     6.09
 HUB      5.75     1.35     3.73   501.00     1.09   444.57   478.35     9.13

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.63    28.60    24.20     4.40     0.93     0.31     1.80
 MEAN    34.28    17.05    12.70     4.35     0.92     0.26     2.22
 HUB     41.13    -5.69    -9.30     3.61     0.92     0.11     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   767.6245   403.9923   652.7156  1033.3807     0.7428    -0.0892     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.6079     3.9032   450.3361   475.7688     7.4177    31.7551    35.4000     3.6450

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   615.7371   150.6281   597.0288  1052.5787     0.5850     0.2684     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5708     4.4308   467.2348   474.6467   554.9116     0.0327     0.3895

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   613.0662     0.0000   613.0662  1052.8492     0.5823     0.2997     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4141   467.5022   474.6940     0.0000     0.0600     0.0525     0.2582
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8563     5.5385     1.2987   497.7202    39.9882   229.3139     1.7776

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 248658.547       0.552     827.437  666835.688   0.190909E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 4.969   EfDer =  0.997    SH =  0.281400E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     58.884    3728.968       5.539     497.720       1.000       1.000       0.980
 W Kg/sec =  26.766  Wdry =  58.868  WH2O = 0.017  lbm/sec   H2O =   0.119g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    153.094    3806.749       1.381       0.249      53.357      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 133750.016   46198.426       1.317     590.487     448.189     468.502       1.045

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   543.61    -0.19   543.61     0.51     0.81   682.65
 MEAN    18.08     0.00    -0.02   543.61    -0.19   543.61     0.51     0.76
 HUB     15.21     0.00    -0.02   543.61    -0.19   543.61     0.51     0.69

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     50.90     46.36     4.54   668.73   861.95     4.64   473.97   474.91     4.99
 MEAN    47.27     42.30     4.97   588.29   801.14     4.64   473.97   474.91     4.99
 HUB     42.33     37.84     4.49   494.95   735.31     4.64   473.97   474.91     4.99

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   606.46   283.01   536.38  1087.07      0.56     2.33     2.04     9.02
 MEAN    18.01   623.91   302.32   545.77  1083.27      0.58     2.40     2.13     7.35
 HUB     15.22   680.55   392.59   555.91  1079.80      0.63     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    664.50   658.20   381.49     0.61  5782.85      0.92     0.91
 MEAN   586.07   615.12   283.74     0.57  5448.23      0.92     0.91     0.91     1.41
 HUB    495.38   565.33   102.79     0.52  5979.18      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.73     1.22     5.47   527.97     1.06   498.41   490.39     2.27
 MEAN     6.66     1.20     5.33   526.22     1.06   494.93   489.66     2.54
 HUB      6.78     1.22     5.20   528.99     1.06   491.77   491.24     2.81

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     27.82    35.42    31.50     3.92     0.93     0.35     1.40
 MEAN    28.98    27.47    23.50     3.97     0.92     0.35     1.63
 HUB     35.23    10.48     6.50     3.98     0.92     0.37     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   704.0506   303.1729   635.4317  1075.5083     0.6546    -0.2048     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7105     5.0492   487.8953   490.8168     3.2488    25.5064    30.6000     5.0936

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   598.6795   126.9243   585.0704  1087.6028     0.5505     0.0837     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6801     5.4506   498.9244   490.1898   491.5697     0.0318     0.2598

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   629.8730     0.0000   629.8730  1084.2239     0.5809     0.1550     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3066	495.8476	490.3481	0.0000	0.0600	0.0526	-0.0198

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8593	6.6512	1.2009	527.7241	30.0061	264.7663	2.0525

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
186737.656	0.423	621.389	600651.563	0.327003E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.277 EfDer = 0.998 SH = 0.400614E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.884	3728.968	6.651	527.724	1.000	1.000	0.980

W Kg/sec = 26.766 Wdry = 58.861 WH2O = 0.024 lbm/sec H2O = 0.197g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
131.268	3696.948	1.381	0.249	53.361	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
115386.438	46196.270	1.419	545.479	384.335	424.468	1.104

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	507.67	-0.17	507.67	0.46	0.75	647.48
MEAN	17.74	0.00	-0.02	507.67	-0.17	507.67	0.46	0.70	
HUB	15.05	0.00	-0.02	507.67	-0.17	507.67	0.46	0.64	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.15	46.36	5.79	653.11	827.35	5.75	507.02	490.13	2.30
MEAN	48.68	43.40	5.28	577.23	768.85	5.75	507.02	490.13	2.30
HUB	43.98	38.84	5.14	489.75	705.52	5.75	507.02	490.13	2.30

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	580.01	284.34	505.53	1121.08	0.52	2.26	1.98	8.75
MEAN	17.51	595.57	301.96	513.34	1117.61	0.53	2.34	2.07	6.78
HUB	14.85	648.96	385.82	521.81	1114.40	0.58	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	644.64	620.79	360.31	0.55	5636.28	0.92	0.91		
MEAN	569.69	578.97	267.73	0.52	5289.30	0.92	0.91	0.91	1.43
HUB	483.24	530.82	97.41	0.48	5732.13	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.97	1.20	6.65	557.19	1.06	530.17	503.30	1.25
MEAN	7.88	1.18	6.51	555.37	1.05	526.88	502.61	1.37
HUB	7.99	1.20	6.37	557.69	1.06	523.86	503.77	1.49

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	29.36	35.48	31.50	3.98	0.93	0.37	1.40
MEAN	30.46	27.54	23.50	4.04	0.92	0.37	1.62
HUB	36.48	10.57	6.50	4.07	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.998	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	664.3437	303.9366	590.7411	1111.6394	0.5976	-0.1829	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9301	6.2472	521.3084	503.4676	1.6342	27.2258	31.5000	4.2742

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	569.8171	124.3017	556.0941	1121.5869	0.5080	0.0930	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.9051	6.6430	530.6754	503.0493	451.3937	0.0274	0.2877

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	582.5035	0.0000	582.5035	1120.3245	0.5199	0.1920	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.5702	529.5046	503.1224	0.0000	0.0600	0.0439	0.0423

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8709	7.8815	1.1850	556.7465	29.0242	252.0007	1.9535

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
180753.953	0.435	601.478	571718.938	0.478954E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 5.748 EfDer = 0.999 SH = 0.600492E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.884	3728.968	7.882	556.746	1.000	1.000	0.980

W Kg/sec = 26.766 Wdry = 58.849 WH2O = 0.035 lbm/sec H2O = 0.338g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
113.783	3599.300	1.380	0.249	53.368	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
100743.789	46192.645	1.541	513.330	333.197	395.845	1.188

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	471.01	-0.16	471.01	0.42	0.69	604.94
MEAN	16.97	0.00	-0.02	471.01	-0.16	471.01	0.42	0.64	
HUB	14.32	0.00	-0.02	471.01	-0.16	471.01	0.42	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.08	46.36	6.72	626.75	784.13	7.00	538.94	503.09	1.37
MEAN	49.55	43.80	5.75	552.25	725.95	7.00	538.94	503.09	1.37
HUB	44.70	37.84	6.86	465.99	662.68	7.00	538.94	503.09	1.37

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	547.57	278.22	471.62	1152.22	0.48	2.16	1.89	8.34
MEAN	16.57	559.63	289.92	478.68	1148.71	0.49	2.24	1.97	6.35
HUB	13.89	606.12	361.83	486.27	1145.40	0.53	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	614.38	579.16	336.16	0.50	5255.90	0.92	0.91		
MEAN	539.34	539.76	249.42	0.47	4807.86	0.92	0.91	0.91	1.46
HUB	452.00	494.56	90.17	0.43	5028.13	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.25	1.17	7.94	584.19	1.05	560.13	514.13	0.85
MEAN	9.13	1.16	7.77	581.85	1.05	556.72	513.29	0.93
HUB	9.19	1.17	7.61	583.00	1.05	553.52	513.88	1.00

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.54	35.48	31.50	3.98	0.93	0.39	1.40
MEAN	31.20	27.52	23.50	4.02	0.92	0.38	1.62
HUB	36.65	10.51	6.50	4.01	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	606.1483	291.5507	531.4263	1145.3728	0.5292	-0.1250	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1726	7.5982	553.5427	513.8777	1.0121	28.7500	32.4000	3.6500

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	526.3022	118.0342	512.8956	1152.8500	0.4565	0.1239	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1538     7.9494   560.7949   513.5922   432.2457     0.0233     0.3122

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   522.0076     0.0000   522.0076  1153.1934     0.4527     0.2211     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.9463   561.1544   513.5707     0.0000     0.0600     0.0412     0.1216

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8753     9.1286     1.1582   583.0089    26.2703   253.5561     1.9656

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 163769.172       0.434     544.959  563442.625   0.684354E-03

Melt Ratio at Stator LE, Throat, TE
0.70622E-01 0.90963E-01 0.14848E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.154   EfDer =  1.000    SH =  0.782482E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     58.884    3728.968       9.129     583.006       1.000       1.000       0.980
 W Kg/sec =  26.766  Wdry =  58.838  WH2O = 0.046  lbm/sec   H2O =   0.497g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    100.529    3517.299       1.380       0.249      53.374      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  89221.414   46189.336       1.731     509.668     294.434     384.739       1.307

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   420.13    -0.14   420.13     0.36     0.63   562.30
 MEAN   15.91     0.00    -0.02   420.13    -0.14   420.13     0.36     0.57
 HUB    13.07     0.00    -0.02   420.13    -0.14   420.13     0.36     0.52

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    54.83    47.36     7.47   596.16   729.45     8.35   568.86   513.51     0.84
 MEAN   50.95    44.80     6.15   517.83   666.94     8.35   568.86   513.51     0.84
 HUB    45.36    38.84     6.52   425.32   597.94     8.35   568.86   513.51     0.84

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   508.23   279.80   424.28  1180.90      0.43     2.05     1.78     7.43
 MEAN   15.50   513.64   278.83   431.36  1176.79      0.44     2.13     1.86     5.75
 HUB    12.59   548.31   328.73   438.84  1172.86      0.47     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   583.79   521.95   304.00     0.44  5022.19      0.92     0.91
 MEAN  504.31   486.74   225.48     0.41  4323.49      0.92     0.91     0.91     1.50
 HUB   409.70   446.24    80.96     0.38  4140.63      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.57     1.16     9.32   609.20     1.04   588.50   523.23     0.57
 MEAN   10.36     1.13     9.10   605.56     1.04   584.41   521.97     0.62
 HUB    10.30     1.13     8.89   604.60     1.04   580.50   521.73     0.67

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    33.40    35.62    31.50     4.12     0.93     0.42     1.40
 MEAN   32.88    27.60    23.50     4.10     0.93     0.40     1.64
 HUB    36.84    10.45     6.50     3.95     0.93     0.39     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   573.3199   283.9420   498.0689  1172.4082     0.4890    -0.2044     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.3829     8.8359   580.1112   522.4056     0.6814    29.6868    33.0000     3.3132
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     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    15.2185   503.9109   115.0685   490.5970  1178.4454     0.4276     0.0326     2.1315

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500    10.3538     9.1460   586.1000   522.1639   410.5396     0.0423     0.3283

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
    14.7013   487.8139     0.0000   487.8139  1179.6971     0.4135     0.2491     0.5109

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.2213   587.3719   522.1595     0.0000     0.0600     0.0404     0.0903

     STAGE EXIT CONDITIONS, STAGE            5
     Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
     0.8791    10.3563     1.1345   606.4391    23.4490   259.6520     2.0128

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 146322.188       0.429     486.902  570958.000   0.846233E-03

Melt Ratio at Stator LE, Throat, TE
0.35378E+00 0.38575E+00 0.47759E+00
 trTOT =     1.3249   Tt4 =   606.4391   T1  =   457.7343

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    926241.50   3082.1660    190.6689      2.4284      0.8528      4.0969      1.3249     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 79.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.536   EfDer =  0.995    SH =  0.128085E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     57.558    3683.918       4.265     457.734       1.000       1.000       0.980
 W Kg/sec =  26.163  Wdry =  57.551  WH2O = 0.007  lbm/sec   H2O =   0.047g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     186.375   3921.556       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 149922.141   45160.738       1.524     831.557     545.559     619.754       1.136

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   432.70    -0.15   432.70     0.42     0.77   705.98
 MEAN    17.06     0.00    -0.02   432.70    -0.15   432.70     0.42     0.68
 HUB     12.51     0.00    -0.02   432.70    -0.15   432.70     0.42     0.58

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.88    50.47     6.41   663.22   792.01     3.78   442.68   448.87     8.14
 MEAN    51.74    47.20     4.54   548.45   698.71     3.78   442.68   448.87     8.14
 HUB     42.92    38.62     4.30   402.17   590.84     3.78   442.68   448.87     8.14

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   665.15   357.48   560.92  1044.75      0.64     7.29     6.52    16.04
 MEAN    18.04   703.18   403.22   576.09  1039.39      0.68     7.43     6.80    12.53
 HUB     15.00   816.57   542.89   609.96  1028.66      0.79     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    663.22   638.83   305.74     0.61  7377.95      0.92     0.91
 MEAN   579.83   602.56   176.61     0.58  7274.95      0.92     0.91     0.91     1.28
 HUB    482.22   612.97    60.67     0.60  8145.21      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.56     1.30     4.24   495.88     1.08   460.30   473.97     4.97
 MEAN     5.54     1.30     4.09   495.35     1.08   455.59   473.93     5.99
 HUB      5.71     1.34     3.78   499.85     1.09   446.23   477.53     8.77

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.51    28.59    24.20     4.39     0.93     0.32     1.80
 MEAN    34.99    17.04    12.70     4.34     0.92     0.27     2.22
 HUB     41.67    -5.68    -9.30     3.62     0.92     0.13     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.995       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   748.7233   402.4327   631.3750  1035.2263     0.7232    -0.0845     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.5858     3.9584   451.9495   475.2713     7.1542    32.5131    35.4000     2.8869

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   596.8275   146.0022   578.6937  1053.8716     0.5663     0.2815     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5537     4.4792   468.3866   474.2408   554.9116     0.0306     0.3995

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   593.4939     0.0000   593.4939  1054.2040     0.5630     0.3135     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4685   468.7087   474.2998     0.0000     0.0600     0.0478     0.2746
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8640     5.5267     1.2959   497.0273    39.2956   226.3473     1.7546

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 244358.516       0.556     794.817  648488.938   0.197566E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.460   EfDer =  0.998    SH =  0.293299E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     57.558    3683.918       5.527     497.027       1.000       1.000       0.980
 W Kg/sec =  26.163  Wdry =  57.541  WH2O = 0.017  lbm/sec   H2O =   0.125g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    149.861    3763.379       1.381       0.249      53.358      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 129882.336   45157.813       1.346     590.487     438.728     468.502       1.068

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   527.89    -0.18   527.89     0.50     0.80   674.88
 MEAN    18.08     0.00    -0.02   527.89    -0.18   527.89     0.50     0.74
 HUB     15.21     0.00    -0.02   527.89    -0.18   527.89     0.50     0.68

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.38    46.36     5.02   660.65   845.79     4.68   474.63   474.55     5.10
 MEAN    47.76    42.30     5.46   581.18   785.28     4.68   474.63   474.55     5.10
 HUB     42.82    37.84     4.98   488.97   719.68     4.68   474.63   474.55     5.10

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   594.78   285.78   521.63  1087.46     0.55     2.33     2.04     9.02
 MEAN    18.01   611.40   303.23   530.91  1083.58     0.56     2.40     2.13     7.35
 HUB     15.22   666.60   389.61   540.88  1080.03     0.62     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    656.47   639.93   370.69     0.59  5839.27     0.92     0.91
 MEAN   578.99   598.25   275.75     0.55  5464.52     0.92     0.91     0.91     1.42
 HUB    489.39   550.01    99.79     0.51  5933.74     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.72     1.22     5.50   527.20     1.06   498.77   490.09     2.35
 MEAN     6.64     1.20     5.36   525.26     1.06   495.22   489.26     2.63
 HUB      6.74     1.22     5.23   527.69     1.06   491.98   490.67     2.92

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.72    35.40    31.50     3.90     0.93     0.36     1.40
 MEAN    29.73    27.45    23.50     3.95     0.92     0.36     1.63
 HUB     35.77    10.45     6.50     3.95     0.92     0.37     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.998       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   686.9897   304.0855   616.0250  1076.4956     0.6382    -0.1963     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   6.6869     5.1004   488.7943   490.3606     3.2986    26.2721    30.6000     4.3279

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   580.6994   123.1124   567.4990  1088.3564     0.5336     0.1026     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     6.6610     5.5005   499.6201   489.7592   491.5697     0.0294     0.2716

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   609.4518     0.0000   609.4518  1085.3401     0.5615     0.1712     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3720	496.8730	489.9113	0.0000	0.0600	0.0474	0.0066

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8671	6.6368	1.2009	526.7145	29.6894	259.8093	2.0140

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
184774.281	0.429	601.009	583461.625	0.340905E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.732 EfDer = 0.999 SH = 0.417335E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.558	3683.918	6.637	526.714	1.000	1.000	0.980

W Kg/sec = 26.163 Wdry = 57.534 WH2O = 0.024 lbm/sec H2O = 0.206g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
128.467	3655.783	1.381	0.249	53.362	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
112178.781	45155.613	1.450	545.479	376.139	424.468	1.128

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	493.56	-0.17	493.56	0.45	0.74	640.27
MEAN	17.74	0.00	-0.02	493.56	-0.17	493.56	0.45	0.69	
HUB	15.05	0.00	-0.02	493.56	-0.17	493.56	0.45	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.59	46.36	6.23	645.22	812.48	5.79	507.15	489.73	2.40
MEAN	49.13	43.40	5.73	570.26	754.32	5.79	507.15	489.73	2.40
HUB	44.44	38.84	5.60	483.83	691.27	5.79	507.15	489.73	2.40

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	569.37	286.38	492.11	1120.89	0.51	2.26	1.98	8.75
MEAN	17.51	584.15	302.37	499.80	1117.37	0.52	2.34	2.07	6.78
HUB	14.85	636.15	382.76	508.11	1114.09	0.57	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	636.86	604.16	350.48	0.54	5676.54	0.92	0.91		
MEAN	562.80	563.58	260.43	0.50	5296.56	0.92	0.91	0.91	1.45
HUB	477.40	516.85	94.64	0.46	5686.56	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.95	1.20	6.68	556.03	1.06	529.99	502.92	1.32
MEAN	7.85	1.18	6.53	554.06	1.05	526.66	502.16	1.45
HUB	7.95	1.20	6.39	556.08	1.06	523.58	503.21	1.58

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.20	35.46	31.50	3.96	0.93	0.38	1.40
MEAN	31.17	27.52	23.50	4.02	0.92	0.38	1.62
HUB	36.99	10.55	6.50	4.05	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	649.5989	304.3589	573.8854	1111.8485	0.5843	-0.1769	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9010	6.2883	521.5074	502.9914	1.7003	27.9392	31.5000	3.5608

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	553.5869	120.7612	540.2547	1121.6958	0.4935	0.1104	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8794	6.6852	530.7825	502.5801	451.3937	0.0256	0.2981

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   565.4351     0.0000   565.4351  1120.5487     0.5046     0.2050     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.6189   529.7208   502.6551     0.0000     0.0600     0.0409     0.0624

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8756     7.8583     1.1840   555.3881    28.6753   247.6976     1.9201

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 178591.047       0.440     580.897  556477.500   0.497911E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 6.154   EfDer =  1.000    SH =  0.622149E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     57.558    3683.918       7.858     555.388       1.000       1.000       0.980
 W Kg/sec =  26.163  Wdry =  57.522  WH2O = 0.036  lbm/sec   H2O =   0.352g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    111.413    3560.163       1.380       0.249      53.368      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  98105.328   45151.980       1.573     513.330     326.262     395.845       1.213

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   458.67    -0.16   458.67     0.41     0.68   598.36
 MEAN    16.97     0.00    -0.02   458.67    -0.16   458.67     0.41     0.63
 HUB     14.32     0.00    -0.02   458.67    -0.16   458.67     0.41     0.58

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.48    46.36     7.12   619.18   770.68     7.03   538.51   502.64     1.44
 MEAN    49.95    43.80     6.15   545.58   712.89     7.03   538.51   502.64     1.44
 HUB     45.12    37.84     7.28   460.36   649.97     7.03   538.51   502.64     1.44

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   538.05   279.41   459.82  1151.45     0.47     2.16     1.89     8.34
 MEAN    16.57   549.38   289.81   466.72  1147.92     0.48     2.24     1.97     6.35
 HUB     13.89   594.58   358.78   474.13  1144.59     0.52     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    606.96   564.55   327.54     0.49  5278.38     0.92     0.91
 MEAN   532.82   526.20   243.01     0.46  4805.91     0.92     0.91     0.91     1.47
 HUB    446.54   482.18    87.76     0.42  4985.71     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.21     1.17     7.95   582.62     1.05   559.39   513.67     0.90
 MEAN     9.09     1.16     7.78   580.18     1.04   555.96   512.79     0.98
 HUB      9.13     1.16     7.62   581.11     1.05   552.74   513.30     1.06

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.29    35.46    31.50     3.96     0.93     0.40     1.40
 MEAN    31.84    27.51    23.50     4.01     0.93     0.39     1.62
 HUB     37.12    10.49     6.50     3.99     0.93     0.40     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   593.9987   291.4373   517.5894  1144.8077     0.5189    -0.1216     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.1316     7.6183   552.9990   513.3571     1.0677    29.3824    32.4000     3.0176

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   512.4995   114.9386   499.4445  1152.2672     0.4448     0.1381     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1152     7.9718   560.2313   513.0713   432.2457     0.0221     0.3212

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   508.2992     0.0000   508.2992  1152.5929     0.4410     0.2315     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.9687   560.5732   513.0530     0.0000     0.0600     0.0397     0.1359

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8780     9.0911     1.1569   581.2936    25.9136   249.7271     1.9359

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 161555.406       0.439     525.486  549399.750   0.707524E-03

Melt Ratio at Stator LE, Throat, TE
0.71418E-01 0.92098E-01 0.15053E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.501   EfDer =  1.000    SH =  0.807158E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     57.558    3683.918       9.091     581.291       1.000       1.000       0.980
 W Kg/sec =  26.163  Wdry =  57.512  WH2O = 0.046  lbm/sec   H2O =   0.514g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     98.525    3479.928       1.380       0.249      53.374      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  87058.313   45148.699       1.766     509.668     288.569     384.739       1.333

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   409.95    -0.14   409.95     0.35     0.62   556.33
 MEAN    15.91     0.00    -0.02   409.95    -0.14   409.95     0.35     0.57
 HUB     13.07     0.00    -0.02   409.95    -0.14   409.95     0.35     0.51

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.17    47.36     7.81   588.96   717.70     8.35   567.82   513.00     0.90
 MEAN    51.30    44.80     6.50   511.58   655.68     8.35   567.82   513.00     0.90
 HUB     45.72    38.84     6.88   420.18   587.13     8.35   567.82   513.00     0.90

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   500.16   279.93   414.48  1179.53     0.42     2.05     1.78     7.43
 MEAN    15.50   504.85   278.12   421.34  1175.46     0.43     2.13     1.86     5.75
 HUB     12.59   538.33   325.78   428.57  1171.54     0.46     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    576.74   509.79   296.81     0.43  5024.57     0.92     0.91
 MEAN   498.22   475.36   220.10     0.40  4312.40     0.92     0.91     0.91     1.52
 HUB    404.75   435.79    78.97     0.37  4103.36     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.51     1.16     9.30   607.18     1.04   587.13   522.68     0.61
 MEAN    10.30     1.13     9.09   603.51     1.04   583.08   521.40     0.66
 HUB     10.24     1.13     8.88   602.43     1.04   579.20   521.11     0.72

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.03    35.61    31.50     4.11     0.93     0.43     1.40
 MEAN    33.43    27.58    23.50     4.08     0.93     0.40     1.64
 HUB     37.24    10.44     6.50     3.94     0.93     0.39     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   562.4462   283.2169   485.9361  1171.3081     0.4802    -0.2007     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.3246     8.8361   579.0233   521.8227     0.7241    30.2348    33.0000     2.7652
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     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    15.2185   491.4440   112.2217   478.4595  1177.3546     0.4174     0.0480     2.1315

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500    10.2989     9.1500   585.0165   521.5825   410.5396     0.0404     0.3359

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
    14.7013   475.9580     0.0000   475.9580  1178.5280     0.4039     0.2579     0.5109

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.2200   586.2094   521.5773     0.0000     0.0600     0.0392     0.1035

     STAGE EXIT CONDITIONS, STAGE            5
     Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
     0.8809    10.3004     1.1330   604.3599    23.0852   256.3647     1.9873

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 144060.125       0.433     468.579  557678.188   0.872112E-03

Melt Ratio at Stator LE, Throat, TE
0.35606E+00 0.38833E+00 0.48076E+00
 trTOT =     1.3203   Tt4 =   604.3599   T1  =   457.7341

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    913339.38   2970.7881    186.3750      2.4153      0.8589      4.5362      1.3203     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 76.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.868   EfDer =  0.997    SH =  0.130098E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     56.602    3653.292       4.265     457.734       1.000       1.000       0.980
  W Kg/sec =  25.728  Wdry =  56.595  WH2O = 0.007  lbm/sec   H2O =   0.048g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     183.279   3888.954       1.381       0.248      53.353      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 146910.563   44410.617       1.550     831.557     536.498     619.754       1.155

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   424.01    -0.15   424.01     0.41     0.76   700.11
 MEAN    17.06     0.00    -0.02   424.01    -0.15   424.01     0.41     0.67
 HUB     12.51     0.00    -0.02   424.01    -0.15   424.01     0.41     0.57

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.20    50.47     6.73   657.70   782.65     3.80   443.28   448.86     8.06
 MEAN    52.07    47.20     4.87   543.89   689.75     3.80   443.28   448.86     8.06
 HUB     43.26    38.62     4.64   398.83   582.21     3.80   443.28   448.86     8.06

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   655.58   358.66   548.77  1045.69      0.63     7.29     6.52    16.04
 MEAN    18.04   692.41   402.28   563.57  1040.31      0.67     7.43     6.80    12.53
 HUB     15.00   802.07   537.39   595.43  1029.94      0.78     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    657.70   624.97   299.05     0.60  7402.14      0.92     0.91
 MEAN   575.01   589.44   172.72     0.57  7258.08      0.92     0.91     0.91     1.30
 HUB    478.21   598.36    59.17     0.58  8062.62      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.55     1.30     4.27   495.69     1.08   461.13   473.84     4.91
 MEAN     5.53     1.30     4.12   494.95     1.08   456.39   473.67     5.92
 HUB      5.68     1.33     3.82   499.08     1.09   447.34   476.99     8.54

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.17    28.59    24.20     4.39     0.93     0.33     1.80
 MEAN    35.52    17.04    12.70     4.34     0.92     0.28     2.22
 HUB     42.07    -5.68    -9.30     3.62     0.92     0.14     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.997       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   735.7476   401.5017   616.5394  1036.4760     0.7099    -0.0813     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.5712     3.9960   453.0434   474.9468     6.9890    33.0729    35.4000     2.3271

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   583.5778   142.7609   565.8466  1054.7712     0.5533     0.2912     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.5420     4.5126   469.1888   473.9722   554.9116     0.0293     0.4069

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   579.9116     0.0000   579.9116  1055.1304     0.5496     0.3232     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.5052   469.5346   474.0390     0.0000     0.0600     0.0449     0.2863
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8688     5.5182     1.2939   496.5714    38.8398   224.1489     1.7376

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 241529.313       0.558     772.566  635462.438   0.202404E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.824   EfDer =  0.999    SH =  0.301958E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     56.602    3653.292       5.518     496.571       1.000       1.000       0.980
 W Kg/sec =  25.728  Wdry =  56.585  WH2O = 0.017  lbm/sec   H2O =   0.129g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    147.531    3733.805       1.381       0.249      53.358      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 127165.727   44407.625       1.367     590.487     431.908     468.502       1.085

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   516.85    -0.18   516.85     0.49     0.79   669.57
 MEAN    18.08     0.00    -0.02   516.85    -0.18   516.85     0.49     0.73
 HUB     15.21     0.00    -0.02   516.85    -0.18   516.85     0.49     0.67

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.74    46.36     5.38   655.15   834.62     4.70   475.10   474.31     5.17
 MEAN    48.12    42.30     5.82   576.35   774.29     4.70   475.10   474.31     5.17
 HUB     43.18    37.84     5.34   484.91   708.83     4.70   475.10   474.31     5.17

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   586.72   287.93   511.21  1087.76      0.54     2.33     2.04     9.02
 MEAN    18.01   602.73   304.07   520.41  1083.83      0.56     2.40     2.13     7.35
 HUB     15.22   656.88   387.68   530.28  1080.21      0.61     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    651.01   627.03   363.08     0.58  5883.13      0.92     0.91
 MEAN   574.17   586.33   270.11     0.54  5479.41      0.92     0.91     0.91     1.43
 HUB    485.32   539.19    97.64     0.50  5904.37      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.22     5.52   526.72     1.06   499.05   489.90     2.40
 MEAN     6.62     1.20     5.38   524.65     1.06   495.45   489.00     2.70
 HUB      6.72     1.22     5.25   526.82     1.06   492.15   490.30     3.00

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.39    35.38    31.50     3.88     0.93     0.37     1.40
 MEAN    30.30    27.43    23.50     3.93     0.92     0.36     1.63
 HUB     36.17    10.43     6.50     3.93     0.92     0.38     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   675.2595   304.9183   602.4949  1077.1887     0.6269    -0.1905     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6708     5.1350   489.4259   490.0630     3.3334    26.8436    30.6000     3.7564

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   568.1255   120.4467   555.2110  1088.9066     0.5217     0.1163     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6476     5.5345   500.1282   489.4772   491.5697     0.0278     0.2803

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   595.3499     0.0000   595.3499  1086.1149     0.5481     0.1828     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4157	497.5855	489.6254	0.0000	0.0600	0.0442	0.0250

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8718	6.6263	1.2008	526.0610	29.4918	256.2146	1.9862

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
183550.281	0.433	587.112	571298.625	0.351062E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.071 EfDer = 0.999 SH = 0.429605E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.602	3653.292	6.626	526.061	1.000	1.000	0.980

W Kg/sec = 25.728 Wdry = 56.578 WH2O = 0.024 lbm/sec H2O = 0.213g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
126.456	3627.642	1.381	0.249	53.362	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
109924.320	44405.398	1.473	545.479	370.252	424.468	1.146

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	483.64	-0.17	483.64	0.44	0.73	635.34
MEAN	17.74	0.00	-0.02	483.64	-0.17	483.64	0.44	0.68	
HUB	15.05	0.00	-0.02	483.64	-0.17	483.64	0.44	0.62	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.92	46.36	6.56	639.85	802.20	5.81	507.28	489.48	2.47
MEAN	49.47	43.40	6.07	565.52	744.25	5.81	507.28	489.48	2.47
HUB	44.78	38.84	5.94	479.81	681.39	5.81	507.28	489.48	2.47

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	562.03	288.00	482.63	1120.82	0.50	2.26	1.98	8.75
MEAN	17.51	576.23	302.83	490.24	1117.25	0.52	2.34	2.07	6.78
HUB	14.85	627.22	380.73	498.45	1113.93	0.56	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	631.56	592.43	343.56	0.53	5708.67	0.92	0.91		
MEAN	558.13	552.73	255.30	0.49	5304.40	0.92	0.91	0.91	1.46
HUB	473.43	507.00	92.71	0.46	5656.30	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.93	1.20	6.69	555.29	1.06	529.92	502.68	1.36
MEAN	7.83	1.18	6.55	553.22	1.05	526.56	501.88	1.50
HUB	7.92	1.19	6.40	555.02	1.06	523.43	502.83	1.63

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.83	35.44	31.50	3.94	0.93	0.39	1.40
MEAN	31.70	27.51	23.50	4.01	0.93	0.38	1.62
HUB	37.37	10.54	6.50	4.04	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	639.4082	304.8135	562.0779	1112.0374	0.5750	-0.1726	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8807	6.3160	521.6870	502.6804	1.7460	28.4709	31.5000	3.0291

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	542.2081	118.2790	529.1500	1121.8253	0.4833	0.1230	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8612	6.7137	530.9083	502.2729	451.3937	0.0245	0.3057

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	553.6009	0.0000	553.6009	1120.7443	0.4940	0.2138	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6505	529.9086	502.3473	0.0000	0.0600	0.0397	0.0760

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8778	7.8407	1.1833	554.5116	28.4523	244.5778	1.8960

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
177209.641	0.444	566.830	545608.688	0.511895E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.455 EfDer = 1.000 SH = 0.638257E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.602	3653.292	7.841	554.511	1.000	1.000	0.980

W Kg/sec = 25.728 Wdry = 56.566 WH2O = 0.036 lbm/sec H2O = 0.361g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
109.722	3533.354	1.380	0.249	53.369	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
96256.594	44401.758	1.598	513.330	321.313	395.845	1.232

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	450.03	-0.15	450.03	0.40	0.67	593.85
MEAN	16.97	0.00	-0.02	450.03	-0.15	450.03	0.40	0.62	
HUB	14.32	0.00	-0.02	450.03	-0.15	450.03	0.40	0.57	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.77	46.36	7.41	614.03	761.41	7.04	538.26	502.34	1.49
MEAN	50.26	43.80	6.46	541.04	703.86	7.04	538.26	502.34	1.49
HUB	45.42	37.84	7.58	456.54	641.16	7.04	538.26	502.34	1.49

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	531.52	280.44	451.51	1150.99	0.46	2.16	1.89	8.34
MEAN	16.57	542.30	289.90	458.31	1147.45	0.47	2.24	1.97	6.35
HUB	13.89	586.56	356.75	465.59	1144.10	0.51	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	601.91	554.26	321.47	0.48	5297.67	0.92	0.91		
MEAN	528.39	516.65	238.49	0.45	4807.34	0.92	0.91	0.91	1.48
HUB	442.83	473.48	86.08	0.41	4957.46	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.19	1.17	7.95	581.61	1.05	558.94	513.37	0.94
MEAN	9.06	1.16	7.79	579.10	1.04	555.51	512.46	1.02
HUB	9.10	1.16	7.62	579.87	1.05	552.27	512.90	1.11

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.84	35.45	31.50	3.95	0.93	0.40	1.40
MEAN	32.31	27.49	23.50	3.99	0.93	0.39	1.62
HUB	37.46	10.47	6.50	3.97	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	585.6135	291.5269	507.8930	1144.4834	0.5117	-0.1192	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1019	7.6306	552.6876	513.0147	1.1067	29.8555	32.4000	2.5445

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	502.8220	112.7683	490.0135	1151.9388	0.4365	0.1487	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.0870	7.9858	559.9144	512.7282	432.2457	0.0213	0.3279

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	498.6917	0.0000	498.6917	1152.2518	0.4328	0.2393	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9827	560.2440	512.7120	0.0000	0.0600	0.0388	0.1463

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8796	9.0637	1.1560	580.1875	25.6840	246.9404	1.9143

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
160131.672	0.442	512.204	539319.000	0.724789E-03

Melt Ratio at Stator LE, Throat, TE
0.72270E-01 0.93243E-01 0.15245E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.761 EfDer = 1.000 SH = 0.825575E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.602	3653.292	9.064	580.185	1.000	1.000	0.980

W Kg/sec = 25.728 Wdry = 56.555 WH2O = 0.047 lbm/sec H2O = 0.526g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
97.089	3454.286	1.380	0.249	53.375	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
85533.148	44398.488	1.792	509.668	284.367	384.739	1.353

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	402.77	-0.14	402.77	0.35	0.61	552.23
MEAN	15.91	0.00	-0.02	402.77	-0.14	402.77	0.35	0.56	
HUB	13.07	0.00	-0.02	402.77	-0.14	402.77	0.35	0.50	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.42	47.36	8.06	584.06	709.58	8.35	567.18	512.67	0.93
MEAN	51.56	44.80	6.76	507.32	647.87	8.35	567.18	512.67	0.93
HUB	45.98	38.84	7.14	416.68	579.62	8.35	567.18	512.67	0.93

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	494.58	280.22	407.54	1178.67	0.42	2.05	1.78	7.43
MEAN	15.50	498.76	277.78	414.24	1174.62	0.42	2.13	1.86	5.75
HUB	12.59	531.38	323.82	421.31	1170.72	0.45	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	571.94	501.19	291.72	0.43	5029.76	0.92	0.91		
MEAN	494.08	467.31	216.30	0.40	4307.15	0.92	0.91	0.91	1.52
HUB	401.38	428.39	77.56	0.37	4078.71	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.47	1.16	9.29	605.89	1.04	586.28	522.31	0.63
MEAN	10.26	1.13	9.08	602.19	1.04	582.25	521.02	0.69
HUB	10.19	1.12	8.87	601.03	1.04	578.39	520.70	0.75

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	34.51	35.60	31.50	4.10	0.93	0.43	1.40
MEAN	33.84	27.57	23.50	4.07	0.93	0.41	1.64
HUB	37.55	10.43	6.50	3.93	0.93	0.40	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	554.8953	282.8748	477.3788	1170.6356	0.4740	-0.1979	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.2832	8.8350	578.3593	521.4387	0.7541	30.6492	33.0000	2.3508

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   482.6557   110.2148   469.9034  1176.6946     0.4102     0.0593     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.2597     9.1517   584.3622   521.1989   410.5396     0.0391     0.3418

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   467.5861     0.0000   467.5861  1177.8152     0.3970     0.2646     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.2182   585.5018   521.1933     0.0000     0.0600     0.0385     0.1134

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8821    10.2605     1.1320   603.0186    22.8501   253.9303     1.9685

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 142599.391       0.436     456.124  548068.625   0.891420E-03

Melt Ratio at Stator LE, Throat, TE
0.35847E+00 0.39100E+00 0.48397E+00
 trTOT =     1.3174   Tt4 =   603.0186   T1  =   457.7339

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    905020.31   2894.8354    183.2794      2.4059      0.8625      4.8684      1.3174     37.3740
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10µm, ISA +36R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.887   EfDer =  0.985    SH =  0.251326E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     61.643    3973.534       4.265     477.916       1.000       1.000       0.980
 W Kg/sec =  28.020  Wdry =  61.628  WH2O = 0.015  lbm/sec   H2O =   0.087g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    203.960    4139.589       1.381       0.248      53.356      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 171507.766   48363.531       1.393     831.557     597.079     619.754       1.038

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   495.00    -0.17   495.00     0.47     0.83   745.23
 MEAN    17.06     0.00    -0.02   495.00    -0.17   495.00     0.47     0.74
 HUB     12.51     0.00    -0.02   495.00    -0.17   495.00     0.47     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.32     50.47     4.85   715.36   870.06     3.66   458.22   461.82     7.21
 MEAN    50.09     47.20     2.89   591.57   771.48     3.66   458.22   461.82     7.21
 HUB     41.24     38.62     2.62   433.79   658.29     3.66   458.22   461.82     7.21

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   742.65   361.53   648.71  1061.48      0.70     7.29     6.52    16.04
 MEAN    18.04   788.67   420.76   667.05  1055.95      0.75     7.43     6.80    12.53
 HUB     15.00   932.12   592.42   719.64  1041.69      0.89     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    715.36   738.94   353.83     0.70  7461.79      0.92     0.90
 MEAN   625.41   697.74   204.65     0.66  7591.77      0.92     0.90     0.90     1.21
 HUB    520.13   723.26    72.28     0.69  8888.42      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.61     1.31     4.06   519.52     1.09   475.18   485.52     4.61
 MEAN     5.63     1.32     3.91   520.24     1.09   470.24   486.40     5.52
 HUB      5.89     1.38     3.52   527.47     1.10   457.62   492.35     8.89

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.13    28.61    24.20     4.41     0.93     0.27     1.80
 MEAN    32.24    17.06    12.70     4.36     0.91     0.22     2.22
 HUB     39.46    -5.74    -9.30     3.56     0.91     0.06     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950      1.000       0.985       1.812     33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   852.6810   419.9444   742.0995  1048.8843     0.8129    -0.1075     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.6918     3.7031   463.9675   488.4622     7.1779    29.5049    35.4000     5.8951

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   694.0648   169.7894   672.9766  1070.9309     0.6481     0.2293     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.6315     4.2603   483.6920   486.2973   554.9116     0.0421     0.3596

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   696.1580     0.0000   696.1580  1070.6415     0.6502     0.2543     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.2088	483.4649	486.3371	0.0000	0.0600	0.0731	0.2020

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8231	5.5731	1.3068	522.4092	44.4953	237.8157	1.8435

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
276805.969	0.541	964.257	687608.063	0.363376E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.522 EfDer = 0.989 SH = 0.505407E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
61.643	3973.534	5.573	522.409	1.000	1.000	0.980

W Kg/sec = 28.020 Wdry = 61.612 WH2O = 0.031 lbm/sec H2O = 0.200g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
163.174	3959.403	1.381	0.249	53.365	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
149924.984	48358.711	1.236	590.487	477.766	468.502	0.981

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	609.35	-0.21	609.35	0.56	0.87	710.03
MEAN	18.08	0.00	-0.02	609.35	-0.21	609.35	0.56	0.81	
HUB	15.21	0.00	-0.02	609.35	-0.21	609.35	0.56	0.75	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.47	46.36	3.11	712.58	937.75	4.50	492.59	486.39	3.98
MEAN	45.82	42.30	3.52	626.87	874.38	4.50	492.59	486.39	3.98
HUB	40.89	37.84	3.05	527.42	806.04	4.50	492.59	486.39	3.98

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	660.93	281.69	597.90	1109.66	0.60	2.33	2.04	9.02
MEAN	18.01	681.14	307.45	607.80	1106.04	0.62	2.40	2.13	7.35
HUB	15.22	743.65	412.53	618.74	1102.80	0.67	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	708.08	734.36	426.38	0.66	5756.50	0.92	0.91		
MEAN	624.51	685.53	317.05	0.62	5540.98	0.92	0.91	0.91	1.37
HUB	527.87	629.39	115.34	0.57	6283.08	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.78	1.22	5.35	554.47	1.06	519.39	500.23	1.81
MEAN	6.73	1.21	5.23	553.27	1.06	516.01	499.89	1.99
HUB	6.90	1.24	5.11	557.40	1.07	512.99	501.96	2.17

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.23	35.49	31.50	3.99	0.93	0.32	1.40
MEAN	26.83	27.55	23.50	4.05	0.92	0.32	1.63
HUB	33.69	10.56	6.50	4.06	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.989	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	781.0240	308.3146	717.5936	1095.2996	0.7131	-0.2364	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7882	4.8556	506.0699	501.4444	2.7145	23.2508	30.6000	7.3492

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	674.5256	143.0042	659.1923	1108.6971	0.6084	0.0229	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7383	5.2639	518.5141	500.4244	491.5697	0.0416	0.2221

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	718.1754	0.0000	718.1754	1103.4460	0.6508	0.0994	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0477	513.6384	500.7180	0.0000	0.0600	0.0742	-0.1143

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8246	6.6870	1.1999	555.0457	32.6383	280.2812	2.1727

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
203279.031	0.405	708.125	622546.625	0.576161E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.917 EfDer = 0.992 SH = 0.684619E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
61.643	3973.534	6.687	555.045	1.000	1.000	0.980

W Kg/sec = 28.020 Wdry = 61.601 WH2O = 0.042 lbm/sec H2O = 0.315g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
140.177	3841.234	1.380	0.249	53.370	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
128970.945	48355.305	1.329	545.479	410.496	424.468	1.034

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	567.44	-0.20	567.44	0.51	0.80	672.75
MEAN	17.74	0.00	-0.02	567.44	-0.20	567.44	0.51	0.75	
HUB	15.05	0.00	-0.02	567.44	-0.20	567.44	0.51	0.69	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.82	46.36	4.46	695.94	898.10	5.62	529.21	500.12	1.73
MEAN	47.32	43.40	3.92	615.09	837.00	5.62	529.21	500.12	1.73
HUB	42.62	38.84	3.78	521.87	771.06	5.62	529.21	500.12	1.73

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	630.56	285.10	562.43	1146.54	0.55	2.26	1.98	8.75
MEAN	17.51	648.79	308.48	570.76	1143.18	0.57	2.34	2.07	6.78
HUB	14.85	707.88	405.90	579.95	1140.12	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	686.92	691.23	401.83	0.60	5651.73	0.92	0.91		
MEAN	607.05	644.14	298.57	0.56	5403.93	0.92	0.91	0.91	1.40
HUB	514.93	590.11	109.03	0.52	6030.54	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.02	1.20	6.55	586.49	1.06	554.59	512.24	0.95
MEAN	7.96	1.19	6.41	585.12	1.05	551.34	511.84	1.02
HUB	8.12	1.21	6.28	588.60	1.06	548.39	513.38	1.10

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.88	35.54	31.50	4.04	0.93	0.34	1.40
MEAN	28.39	27.61	23.50	4.11	0.92	0.34	1.62
HUB	34.99	10.65	6.50	4.15	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	731.6923	310.5068	662.5399	1135.2686	0.6445	-0.2045	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0167	6.0838	543.7951	512.8862	1.2540	25.1107	31.5000	6.3893

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	638.9168	139.3754	623.5296	1145.8760	0.5576	0.0381	2.3726

```
   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.9767     6.4758   553.9929   512.2767   451.3937     0.0347     0.2557

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   656.2914     0.0000   656.2914  1143.9785     0.5737     0.1468     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3675   552.1917   512.3372     0.0000     0.0600     0.0594    -0.0288

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8463     7.9367     1.1869   586.7342    31.6924   265.5565     2.0586

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 197585.516       0.419     688.292  588391.875   0.786145E-03

Melt Ratio at Stator LE, Throat, TE
0.12819E-01 0.21457E-01 0.52098E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 4.524   EfDer =  0.995    SH =  0.911491E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     61.643    3973.534       7.937     586.733       1.000       1.000       0.980
 W Kg/sec =  28.020  Wdry =  61.587  WH2O = 0.056  lbm/sec   H2O =   0.483g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    121.430    3736.065       1.380       0.249      53.378      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 112085.313   48350.996       1.443     513.330     355.669     395.845       1.113

ROTOR LEADING EDGE CONDITIONS, STAGE   4

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    19.26     0.00    -0.02   524.03    -0.18   524.03     0.45     0.73   627.92
 MEAN   16.97     0.00    -0.02   524.03    -0.18   524.03     0.45     0.68
 HUB    14.32     0.00    -0.02   524.03    -0.18   524.03     0.45     0.62

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    51.89    46.36     5.53   667.85   849.04     6.91   564.72   512.05     0.92
 MEAN   48.32    43.80     4.52   588.47   788.11     6.91   564.72   512.05     0.92
 HUB    43.47    37.84     5.63   496.56   722.05     6.91   564.72   512.05     0.92

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    18.88   593.47   281.47   522.47  1180.48      0.50     2.16     1.89     8.34
 MEAN   16.57   608.10   297.71   530.24  1176.94      0.52     2.24     1.97     6.35
 HUB    13.89   659.86   381.15   538.65  1173.65      0.56     2.26     2.10     4.19

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   654.68   642.07   373.20     0.54  5317.66      0.92     0.91
 MEAN  574.71   598.23   277.00     0.51  4937.27      0.92     0.91     0.91     1.42
 HUB   481.64   547.95   100.50     0.47  5296.74      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     9.34     1.18     7.88   616.29     1.05   588.06   522.44     0.57
 MEAN    9.23     1.16     7.72   614.17     1.05   584.54   521.80     0.61
 HUB     9.33     1.18     7.55   616.17     1.05   581.27   522.66     0.65

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    28.31    35.54    31.50     4.04     0.93     0.36     1.40
 MEAN   29.31    27.58    23.50     4.08     0.92     0.36     1.62
 HUB    35.28    10.57     6.50     4.07     0.92     0.38     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.995       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   662.5455   299.3839   591.0464  1172.6725     0.5650    -0.1362     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.2876     7.4999   580.3729   522.4446     0.6703    26.8637    32.4000     5.5363
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   585.7753   131.3723   570.8538  1180.4033     0.4963     0.0794     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.2584     7.8418   588.0479   522.0901   432.2457     0.0284     0.2859

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   581.0762     0.0000   581.0762  1180.8068     0.4921     0.1893     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.8384   588.4838   522.0370     0.0000     0.0600     0.0469     0.0772

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8634     9.2290     1.1628   615.5295    28.8101   265.6786     2.0595

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 179829.063       0.420     626.437  576203.063   0.988822E-03

Melt Ratio at Stator LE, Throat, TE
0.21618E+00 0.24742E+00 0.33097E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.141   EfDer =  0.997    SH =  0.107853E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     61.643    3973.534       9.229     615.525       1.000       1.000       0.980
 W Kg/sec =  28.020  Wdry =  61.577  WH2O = 0.066  lbm/sec   H2O =   0.650g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    106.959    3647.629       1.379       0.250      53.383      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  98561.344   48347.813       1.627     509.668     313.341     384.739       1.228

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   464.12    -0.16   464.12     0.39     0.66   583.14
 MEAN    15.91     0.00    -0.02   464.12    -0.16   464.12     0.39     0.61
 HUB     13.07     0.00    -0.02   464.12    -0.16   464.12     0.39     0.54

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.86    47.36     6.50   635.26   786.87     8.32   598.28   521.85     0.52
 MEAN    49.94    44.80     5.14   551.79   721.15     8.32   598.28   521.85     0.52
 HUB     44.33    38.84     5.49   453.21   648.81     8.32   598.28   521.85     0.52

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   547.92   287.10   466.68  1212.04      0.45     2.05     1.78     7.43
 MEAN    15.50   555.66   288.72   474.76  1207.69      0.46     2.13     1.86     5.75
 HUB     12.59   594.96   347.00   483.29  1203.56      0.49     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    622.08   574.46   334.99     0.47  5153.42      0.92     0.91
 MEAN   537.39   535.94   248.67     0.44  4477.06      0.92     0.91     0.91     1.47
 HUB    436.57   491.52    89.57     0.41  4370.78      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.73     1.16     9.35   644.13     1.05   620.10   531.26     0.35
 MEAN    10.53     1.14     9.12   640.38     1.04   615.66   530.10     0.38
 HUB     10.49     1.14     8.90   639.79     1.04   611.45   530.03     0.41

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.60    35.67    31.50     4.17     0.93     0.40     1.40
 MEAN    31.31    27.64    23.50     4.14     0.92     0.38     1.64
 HUB     35.68    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   624.0308   294.0175   550.4254  1202.3212     0.5190    -0.2164     2.0437
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    Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
   10.5558     8.8066   610.2623   530.5735     0.4180    28.1095    33.0000     4.8905

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   557.6596   127.3420   542.9257  1208.4891     0.4615    -0.0145     2.1315

   BlockageTh  PtTh      PsTh       TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.5123     9.1025   616.5341   530.2875   410.5396     0.0497     0.3069

    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   538.8945     0.0000   538.8945  1210.0583     0.4453     0.2238     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.1981   618.1707   530.2773     0.0000     0.0600     0.0447     0.0510

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4       Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8712    10.5197     1.1399   641.4078    25.9052   269.5884     2.0898

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 161872.688       0.418     563.886  580185.063   0.113559E-02

Melt Ratio at Stator LE, Throat, TE
0.59064E+00 0.62810E+00 0.73545E+00
 trTOT =     1.3421   Tt4 =   641.4078   T1  =   477.9159

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
   1019372.25   3550.9966    203.9595      2.4667      0.8252      2.8872      1.3421     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 84.0%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.008   EfDer =  0.992    SH =  0.267600E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     57.935    3823.779       4.265     477.915       1.000       1.000       0.980
  W Kg/sec =  26.334  Wdry =  57.919  WH2O = 0.016  lbm/sec   H2O =   0.094g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     191.689    3983.575       1.381       0.248      53.357      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 158584.516   45453.500       1.482     831.557     561.164     619.754       1.104

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   457.70    -0.16   457.70     0.44     0.79   717.14
 MEAN    17.06     0.00    -0.02   457.70    -0.16   457.70     0.44     0.70
 HUB     12.51     0.00    -0.02   457.70    -0.16   457.70     0.44     0.59

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.39    50.47     5.92   688.40   826.80      3.74   461.07   461.75     6.87
 MEAN    51.21    47.20     4.01   569.28   730.58      3.74   461.07   461.75     6.87
 HUB     42.38    38.62     3.76   417.44   619.58      3.74   461.07   461.75     6.87

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   697.45   364.02   594.91  1065.86      0.65     7.29     6.52    16.04
 MEAN    18.04   738.41   414.38   611.18  1060.37      0.70     7.43     6.80    12.53
 HUB     15.00   861.37   565.27   649.94  1048.65      0.82     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    688.40   677.60   324.37     0.64  7513.05      0.92     0.91
 MEAN   601.84   639.29   187.46     0.60  7476.44      0.92     0.91     0.91     1.26
 HUB    500.53   653.16    64.74     0.62  8481.07      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.57     1.31     4.19   518.22     1.08   479.12   484.71     4.34
 MEAN     5.56     1.30     4.04   518.03     1.08   474.19   485.04     5.18
 HUB      5.76     1.35     3.72   523.42     1.10   463.77   489.33     7.61

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.46    28.60    24.20     4.40     0.93     0.30     1.80
 MEAN    34.14    17.05    12.70     4.35     0.92     0.26     2.22
 HUB     41.01    -5.69    -9.30     3.61     0.92     0.11     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.992       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   789.2426   413.5740   672.2057  1055.4644     0.7478    -0.0903     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.6154     3.8907   469.8237   486.5876     6.2537    31.6019    35.4000     3.7981

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   633.6667   155.0142   614.4136  1075.2515     0.5893     0.2659     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5770     4.4213   487.6180   484.9770   554.9116     0.0333     0.3877

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   631.1306     0.0000   631.1306  1075.5068     0.5868     0.2971     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4030   487.8806   485.0522     0.0000     0.0600     0.0537     0.2549
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8544     5.5433     1.2999   519.8853    41.9720   229.8864     1.7821

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 261146.359       0.551     854.975  635796.063   0.397570E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 4.877   EfDer =  0.997    SH =  0.562735E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
    57.935    3823.779       5.543     519.885       1.000       1.000       0.980
W Kg/sec =  26.334  Wdry =  57.902  WH2O = 0.033  lbm/sec   H2O =   0.228g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
   153.808    3819.417       1.381       0.249      53.367      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
137596.953   45448.234       1.311     590.487     450.358     468.502       1.040

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
TIP     20.55     0.00    -0.02   559.24    -0.19   559.24     0.52     0.82   684.93
MEAN    18.08     0.00    -0.02   559.24    -0.19   559.24     0.52     0.76
HUB     15.21     0.00    -0.02   559.24    -0.19   559.24     0.52     0.70

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
TIP     50.81     46.36     4.45   685.73   885.01     4.63   494.77   485.31     4.18
MEAN    47.18     42.30     4.88   603.25   822.74     4.63   494.77   485.31     4.18
HUB     42.24     37.84     4.40   507.54   755.34     4.63   494.77   485.31     4.18

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
TIP     20.42   622.62   289.12   551.42  1110.74     0.56     2.33     2.04     9.02
MEAN    18.01   640.64   309.18   561.09  1106.86     0.58     2.40     2.13     7.35
HUB     15.22   698.87   402.22   571.53  1103.33     0.63     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
TIP    681.39   676.71   392.27     0.61  5907.87     0.92     0.91
MEAN   600.97   632.43   291.79     0.57  5571.72     0.92     0.91     0.91     1.40
HUB    507.97   581.23   105.76     0.53  6125.88     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
TIP      6.74     1.22     5.46   551.54     1.06   520.42   499.29     1.98
MEAN     6.67     1.20     5.33   549.74     1.06   516.79   498.68     2.20
HUB      6.79     1.23     5.20   552.71     1.06   513.49   500.28     2.42

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
TIP     27.67    35.43    31.50     3.93     0.93     0.35     1.40
MEAN    28.86    27.48    23.50     3.98     0.92     0.35     1.63
HUB     35.14    10.48     6.50     3.98     0.92     0.37     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.997       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   723.5880   310.0432   653.7988  1098.7770     0.6585    -0.2065     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   6.7210     5.0409   509.3012   499.9687     2.7838    25.3711    30.6000     5.2289

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   615.8015   130.5543   601.8031  1111.2142     0.5542     0.0804     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     6.6896     5.4441   520.8893   499.1032   491.5697     0.0323     0.2578

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   648.2669     0.0000   648.2669  1107.6733     0.5853     0.1521     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.2964	517.5992	499.3317	0.0000	0.0600	0.0537	-0.0248

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8576	6.6596	1.2014	551.3298	31.4465	265.6610	2.0594

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
195895.484	0.422	641.348	573125.125	0.641799E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.203 EfDer = 0.998 SH = 0.761594E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.935	3823.779	6.660	551.329	1.000	1.000	0.980

W Kg/sec = 26.334 Wdry = 57.890 WH2O = 0.044 lbm/sec H2O = 0.358g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
131.841	3708.900	1.380	0.249	53.373	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
118631.008	45444.688	1.413	545.479	386.105	424.468	1.099

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	521.95	-0.18	521.95	0.47	0.76	649.57
MEAN	17.74	0.00	-0.02	521.95	-0.18	521.95	0.47	0.70	
HUB	15.05	0.00	-0.02	521.95	-0.18	521.95	0.47	0.65	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.08	46.36	5.72	669.71	849.22	5.75	529.48	498.98	1.95
MEAN	48.60	43.40	5.20	591.91	789.30	5.75	529.48	498.98	1.95
HUB	43.91	38.84	5.07	502.20	724.44	5.75	529.48	498.98	1.95

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	595.27	290.77	519.42	1145.67	0.52	2.26	1.98	8.75
MEAN	17.51	611.32	309.01	527.47	1142.11	0.54	2.34	2.07	6.78
HUB	14.85	666.22	395.40	536.19	1138.83	0.59	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	661.04	637.88	370.26	0.56	5763.77	0.92	0.91		
MEAN	584.17	594.93	275.16	0.52	5412.96	0.92	0.91	0.91	1.43
HUB	495.53	545.46	100.12	0.48	5874.46	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.98	1.20	6.65	582.19	1.06	553.76	511.14	1.10
MEAN	7.89	1.19	6.51	580.31	1.05	550.33	510.54	1.19
HUB	8.01	1.20	6.37	582.78	1.06	547.17	511.72	1.29

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	29.24	35.48	31.50	3.98	0.93	0.37	1.40
MEAN	30.36	27.55	23.50	4.05	0.92	0.37	1.62
HUB	36.41	10.58	6.50	4.08	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.998	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	682.3142	311.0417	607.2938	1135.9113	0.6007	-0.1840	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9459	6.2454	544.4240	511.4592	1.4001	27.1205	31.5000	4.3795

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	585.6744	127.7609	571.5695	1146.1219	0.5110	0.0905	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.9202	6.6429	554.2495	510.8961	451.3937	0.0278	0.2863

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4        Ao4           Mach4      cp 3-4   Stator Gap
   17.1214    598.8409     0.0000    598.8409  1144.7980      0.5231     0.1900     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.5684   553.0011   510.9673     0.0000     0.0600     0.0446     0.0391

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8699     7.8958     1.1856   581.7531    30.4279   252.6442     1.9585

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 189747.906       0.434     621.222  545341.063   0.868408E-03

Melt Ratio at Stator LE, Throat, TE
0.17606E-01 0.28398E-01 0.65042E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 5.695   EfDer =  0.999    SH =  0.995966E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     57.935    3823.779       7.896     581.751       1.000       1.000       0.980
 W Kg/sec =  26.334  Wdry =  57.877  WH2O = 0.058  lbm/sec   H2O =   0.537g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    114.227    3610.618       1.380       0.249      53.381      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 103499.617   45440.496       1.534     513.330     334.588     395.845       1.183

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1       CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   483.89    -0.17   483.89      0.42     0.70   606.84
 MEAN    16.97     0.00    -0.02   483.89    -0.17   483.89      0.42     0.65
 HUB     14.32     0.00    -0.02   483.89    -0.17   483.89      0.42     0.59

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.03    46.36     6.67   642.68   804.61     7.01   562.99   510.77     1.07
 MEAN    49.49    43.80     5.69   566.29   745.00     7.01   562.99   510.77     1.07
 HUB     44.65    37.84     6.81   477.84   680.18     7.01   562.99   510.77     1.07

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     18.88   561.78   284.79   484.25  1177.63      0.48     2.16     1.89     8.34
 MEAN    16.57   574.24   296.89   491.53  1174.02      0.49     2.24     1.97     6.35
 HUB     13.89   622.01   370.86   499.37  1170.64      0.53     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    630.00   594.70   345.21     0.50  5380.06      0.92     0.91
 MEAN   553.05   554.28   256.16     0.47  4923.42      0.92     0.91     0.91     1.46
 HUB    463.49   507.88    92.63     0.43  5153.62      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.27     1.17     7.95   610.52     1.05   585.23   521.12     0.67
 MEAN     9.15     1.16     7.78   608.08     1.05   581.65   520.34     0.73
 HUB      9.21     1.17     7.62   609.31     1.05   578.31   520.95     0.78

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     30.46    35.48    31.50     3.98     0.93     0.39     1.40
 MEAN    31.13    27.53    23.50     4.03     0.92     0.38     1.62
 HUB     36.60    10.51     6.50     4.01     0.92     0.39     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   622.1276   298.5581   545.8074  1170.5662     0.5315    -0.1254     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.1957     7.6060   578.2969   520.9285     0.7851    28.6788    32.4000     3.7212

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   540.4827   121.2145   526.7150  1178.2319     0.4587     0.1222     2.2705
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BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.1764	7.9588	585.8972	520.5834	432.2457	0.0235	0.3114

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	536.0584	0.0000	536.0584	1178.5774	0.4548	0.2201	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9559	586.2740	520.5419	0.0000	0.0600	0.0413	0.1202

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8750	9.1511	1.1590	609.2860	27.5486	254.0258	1.9692

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
171993.766	0.433	563.096	537237.438	0.107627E-02

Melt Ratio at Stator LE, Throat, TE
0.23544E+00 0.26827E+00 0.35570E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.125 EfDer = 0.999 SH = 0.116871E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.935	3823.779	9.151	609.282	1.000	1.000	0.980

W Kg/sec = 26.334 Wdry = 57.867 WH2O = 0.068 lbm/sec H2O = 0.712g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
100.864	3528.095	1.379	0.250	53.386	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
91586.172	45437.406	1.725	509.668	295.500	384.739	1.302

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	431.27	-0.15	431.27	0.36	0.63	564.03
MEAN	15.91	0.00	-0.02	431.27	-0.15	431.27	0.36	0.58	
HUB	13.07	0.00	-0.02	431.27	-0.15	431.27	0.36	0.52	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.80	47.36	7.44	611.32	748.25	8.36	594.39	520.39	0.62
MEAN	50.92	44.80	6.12	531.00	684.19	8.36	594.39	520.39	0.62
HUB	45.33	38.84	6.49	436.13	613.46	8.36	594.39	520.39	0.62

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	521.24	286.72	435.30	1207.07	0.43	2.05	1.78	7.43
MEAN	15.50	526.84	285.74	442.62	1202.85	0.44	2.13	1.86	5.75
HUB	12.59	562.48	337.02	450.33	1198.80	0.47	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	598.64	535.52	311.91	0.44	5146.50	0.92	0.91		
MEAN	517.14	499.45	231.40	0.42	4430.65	0.92	0.91	0.91	1.50
HUB	420.11	457.94	83.10	0.38	4244.98	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.60	1.16	9.34	636.77	1.05	615.02	529.63	0.42
MEAN	10.39	1.14	9.12	632.94	1.04	610.73	528.43	0.46
HUB	10.34	1.13	8.91	631.95	1.04	606.63	528.22	0.50

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.37	35.62	31.50	4.12	0.93	0.42	1.40
MEAN	32.85	27.60	23.50	4.10	0.93	0.40	1.64
HUB	36.81	10.45	6.50	3.95	0.93	0.39	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	588.1789	290.9794	511.1609	1198.3173	0.4908	-0.2047	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.4154	8.8537	606.2010	528.8679	0.5032	29.6508	33.0000	3.3492

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     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    15.2185   517.1089   118.0823   503.4464  1204.5104     0.4293     0.0315     2.1315

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500    10.3857     9.1656   612.4815   528.5967   410.5396     0.0425     0.3280

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
    14.7013   500.5372     0.0000   500.5372  1205.7922     0.4151     0.2488     0.5109

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.2422   613.8197   528.5812     0.0000     0.0600     0.0404     0.0896

     STAGE EXIT CONDITIONS, STAGE            5
     Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
     0.8791    10.3884     1.1352   633.8625    24.6042   259.8961     2.0147

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 153772.516       0.429     503.441  544149.875   0.122817E-02

Melt Ratio at Stator LE, Throat, TE
0.61668E+00 0.65511E+00 0.76407E+00
 trTOT =     1.3263   Tt4 =   633.8625   T1  =   477.9154

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    972556.00   3184.0815    191.6885      2.4360      0.8514      4.0084      1.3263     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 79.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.443   EfDer =  0.995    SH =  0.273393E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     56.633    3776.794       4.265     477.915       1.000       1.000       0.980
  W Kg/sec =  25.742  Wdry =  56.617  WH2O = 0.015  lbm/sec   H2O =   0.097g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     187.381   3934.627       1.381       0.248      53.357      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 154217.516   44431.965       1.516     831.557     548.556     619.754       1.130

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   445.09    -0.15   445.09     0.43     0.78   708.33
 MEAN    17.06     0.00    -0.02   445.09    -0.15   445.09     0.43     0.69
 HUB     12.51     0.00    -0.02   445.09    -0.15   445.09     0.43     0.58

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.80    50.47     6.33   679.94   812.79      3.77   461.99   461.73     6.77
 MEAN    51.64    47.20     4.44   562.28   717.25      3.77   461.99   461.73     6.77
 HUB     42.82    38.62     4.20   412.31   606.83      3.77   461.99   461.73     6.77

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   683.05   365.33   577.14  1067.25      0.64     7.29     6.52    16.04
 MEAN    18.04   722.32   412.69   592.82  1061.75      0.68     7.43     6.80    12.53
 HUB     15.00   839.47   556.87   628.18  1050.65      0.80     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    679.94   657.32   314.61     0.62  7540.00      0.92     0.91
 MEAN   594.45   620.05   181.76     0.58  7445.83      0.92     0.91     0.91     1.28
 HUB    494.38   631.28    62.49     0.60  8354.96      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.56     1.30     4.24   517.87     1.08   480.36   484.49     4.27
 MEAN     5.54     1.30     4.08   517.37     1.08   475.43   484.64     5.09
 HUB      5.72     1.34     3.77   522.19     1.09   465.54   488.48     7.31

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.33    28.60    24.20     4.40     0.93     0.32     1.80
 MEAN    34.84    17.05    12.70     4.35     0.92     0.27     2.22
 HUB     41.56    -5.68    -9.30     3.62     0.92     0.12     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.995       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   769.6121   411.8847   650.1182  1057.3843     0.7278    -0.0855     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.5926     3.9469   471.5392   486.0685     6.0361    32.3564    35.4000     3.0436

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   614.1564   150.2414   595.4961  1076.5815     0.5705     0.2790     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.5594     4.4703   488.8297   484.5868   554.9116     0.0310     0.3976

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   610.8799     0.0000   610.8799  1076.9081     0.5673     0.3108     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.4584   489.1566   484.6760     0.0000     0.0600     0.0488     0.2715
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8623     5.5314     1.2971   519.1391    41.2260   226.9377     1.7592

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 256516.703       0.555     820.946  618288.000   0.410099E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.363   EfDer =  0.998    SH =  0.583472E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     56.633    3776.794       5.531     519.139       1.000       1.000       0.980
 W Kg/sec =  25.742  Wdry =  56.600  WH2O = 0.033  lbm/sec   H2O =   0.238g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    150.569    3775.197       1.381       0.249      53.367      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 133608.828   44426.563       1.339     590.487     440.880     468.502       1.063

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   543.03    -0.19   543.03     0.50     0.80   677.00
 MEAN    18.08     0.00    -0.02   543.03    -0.19   543.03     0.50     0.74
 HUB     15.21     0.00    -0.02   543.03    -0.19   543.03     0.50     0.68

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.29     46.36     4.93   677.30   868.26     4.67   495.46   484.98     4.25
 MEAN    47.66     42.30     5.36   595.84   806.31     4.67   495.46   484.98     4.25
 HUB     42.72     37.84     4.88   501.30   739.17     4.67   495.46   484.98     4.25

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   610.54   291.85    536.26  1111.12      0.55     2.33     2.04     9.02
 MEAN    18.01   627.72   310.04    545.81  1107.16      0.57     2.40     2.13     7.35
 HUB     15.22   684.47   399.10    556.08  1103.54      0.62     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    673.02   657.92   381.16     0.59  5963.48      0.92     0.91
 MEAN   593.59   615.07   283.55     0.56  5587.12      0.92     0.91     0.91     1.42
 HUB    501.73   565.47   102.63     0.51  6078.38      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.73     1.22     5.49   550.70     1.06   520.77   499.01     2.04
 MEAN     6.65     1.20     5.36   548.71     1.06   517.07   498.32     2.28
 HUB      6.75     1.22     5.23   551.31     1.06   513.69   499.76     2.51

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.56    35.40    31.50     3.90     0.93     0.36     1.40
 MEAN    29.60    27.45    23.50     3.95     0.92     0.36     1.63
 HUB     35.67    10.46     6.50     3.96     0.92     0.37     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   705.9249   310.9064  633.7721  1099.7820     0.6419    -0.1980     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6967     5.0928   510.2377   499.5317     2.8175    26.1310    30.6000     4.4690

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   597.2708  126.6257  583.6937  1111.9688     0.5371     0.0993     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6700     5.4944   521.6028   498.7025   491.5697     0.0298     0.2696

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   627.1501     0.0000   627.1501  1108.8125     0.5656     0.1684     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3628	518.6701	498.9189	0.0000	0.0600	0.0484	0.0018

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8656	6.6449	1.2013	550.2366	31.0993	260.7137	2.0210

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
193746.766	0.428	620.059	556704.125	0.665570E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.653 EfDer = 0.999 SH = 0.789502E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.633	3776.794	6.645	550.236	1.000	1.000	0.980

W Kg/sec = 25.742 Wdry = 56.588 WH2O = 0.045 lbm/sec H2O = 0.373g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
129.036	3666.965	1.380	0.249	53.374	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
115329.328	44422.965	1.443	545.479	377.897	424.468	1.123

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	507.42	-0.17	507.42	0.45	0.74	642.23
MEAN	17.74	0.00	-0.02	507.42	-0.17	507.42	0.45	0.69	
HUB	15.05	0.00	-0.02	507.42	-0.17	507.42	0.45	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.52	46.36	6.16	661.48	833.83	5.78	529.58	498.62	2.03
MEAN	49.05	43.40	5.65	584.64	774.26	5.78	529.58	498.62	2.03
HUB	44.36	38.84	5.52	496.03	709.71	5.78	529.58	498.62	2.03

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	584.27	292.73	505.65	1145.43	0.51	2.26	1.98	8.75
MEAN	17.51	599.53	309.33	513.57	1141.82	0.53	2.34	2.07	6.78
HUB	14.85	652.98	392.13	522.12	1138.48	0.57	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	652.91	620.81	360.18	0.54	5802.58	0.92	0.91		
MEAN	576.99	579.13	267.67	0.51	5418.34	0.92	0.91	0.91	1.45
HUB	489.44	531.11	97.31	0.47	5825.77	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.96	1.20	6.68	580.92	1.06	553.53	510.80	1.15
MEAN	7.87	1.18	6.53	578.88	1.05	550.05	510.13	1.25
HUB	7.96	1.20	6.39	581.04	1.06	546.84	511.20	1.35

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.07	35.46	31.50	3.96	0.93	0.38	1.40
MEAN	31.06	27.53	23.50	4.03	0.92	0.37	1.62
HUB	36.91	10.56	6.50	4.06	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	667.0779	311.3563	589.9578	1136.0880	0.5872	-0.1779	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9157	6.2866	544.5981	511.0149	1.4518	27.8233	31.5000	3.6767

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	569.0026	124.1241	555.2992	1146.1863	0.4964	0.1076	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8935	6.6848	554.3179	510.4614	451.3937	0.0259	0.2966

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	581.2382	0.0000	581.2382	1144.9886	0.5076	0.2032	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6177	553.1912	510.5340	0.0000	0.0600	0.0412	0.0595

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8750	7.8722	1.1847	580.2751	30.0434	248.3842	1.9255

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
187366.859	0.440	599.641	530820.438	0.898449E-03

Melt Ratio at Stator LE, Throat, TE
0.19188E-01 0.30685E-01 0.69269E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.096 EfDer = 0.999 SH = 0.102736E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.633	3776.794	7.872	580.273	1.000	1.000	0.980

W Kg/sec = 25.742 Wdry = 56.574 WH2O = 0.058 lbm/sec H2O = 0.556g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
111.853	3570.792	1.380	0.249	53.382	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
100785.273	44418.813	1.567	513.330	327.642	395.845	1.208

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	471.20	-0.16	471.20	0.41	0.68	600.14
MEAN	16.97	0.00	-0.02	471.20	-0.16	471.20	0.41	0.63	
HUB	14.32	0.00	-0.02	471.20	-0.16	471.20	0.41	0.58	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.42	46.36	7.06	634.79	790.69	7.03	562.48	510.36	1.12
MEAN	49.90	43.80	6.10	559.33	731.48	7.03	562.48	510.36	1.12
HUB	45.06	37.84	7.22	471.97	667.04	7.03	562.48	510.36	1.12

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	551.95	285.90	472.13	1176.77	0.47	2.16	1.89	8.34
MEAN	16.57	563.65	296.68	479.25	1173.16	0.48	2.24	1.97	6.35
HUB	13.89	610.10	367.64	486.89	1169.75	0.52	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	622.26	579.70	336.36	0.49	5400.90	0.92	0.91		
MEAN	546.25	540.34	249.57	0.46	4919.88	0.92	0.91	0.91	1.47
HUB	457.80	495.17	90.16	0.42	5108.84	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.24	1.17	7.96	608.79	1.05	584.39	520.69	0.71
MEAN	9.11	1.16	7.79	606.25	1.04	580.80	519.87	0.77
HUB	9.16	1.16	7.63	607.25	1.05	577.43	520.40	0.82

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.20	35.47	31.50	3.97	0.93	0.39	1.40
MEAN	31.76	27.51	23.50	4.01	0.93	0.39	1.62
HUB	37.06	10.49	6.50	3.99	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	609.5923	298.3479	531.5932	1169.9271	0.5211	-0.1221	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1535	7.6258	577.6688	520.4399	0.8257	29.3026	32.4000	3.0974

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	526.3141	118.0369	512.9072	1177.5692	0.4469	0.1363	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.1366	7.9806	585.2425	520.0951	432.2457	0.0223	0.3202

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	521.9870	0.0000	521.9870	1177.8965	0.4432	0.2304	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9777	585.6007	520.0569	0.0000	0.0600	0.0399	0.1342

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8778	9.1124	1.1576	607.4185	27.1592	250.2344	1.9398

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
169577.000	0.438	542.707	523891.813	0.110898E-02

Melt Ratio at Stator LE, Throat, TE
0.24184E+00 0.27520E+00 0.36396E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.465 EfDer = 1.000 SH = 0.120273E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.633	3776.794	9.112	607.414	1.000	1.000	0.980

W Kg/sec = 25.742 Wdry = 56.564 WH2O = 0.068 lbm/sec H2O = 0.734g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
98.863	3490.097	1.379	0.250	53.387	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
89368.500	44415.742	1.760	509.668	289.645	384.739	1.328

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	420.83	-0.14	420.83	0.35	0.62	557.95
MEAN	15.91	0.00	-0.02	420.83	-0.14	420.83	0.35	0.57	
HUB	13.07	0.00	-0.02	420.83	-0.14	420.83	0.35	0.51	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.13	47.36	7.77	603.80	736.11	8.36	593.24	519.92	0.66
MEAN	51.26	44.80	6.46	524.47	672.55	8.36	593.24	519.92	0.66
HUB	45.68	38.84	6.84	430.77	602.32	8.36	593.24	519.92	0.66

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	512.90	286.71	425.28	1205.57	0.43	2.05	1.78	7.43
MEAN	15.50	517.78	284.90	432.35	1201.39	0.43	2.13	1.86	5.75
HUB	12.59	552.20	333.89	439.82	1197.38	0.46	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	591.28	523.09	304.57	0.43	5146.18	0.92	0.91		
MEAN	510.78	487.80	225.88	0.41	4417.64	0.92	0.91	0.91	1.51
HUB	414.95	447.23	81.06	0.37	4205.58	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.54	1.16	9.32	634.56	1.04	613.50	529.10	0.45
MEAN	10.33	1.13	9.11	630.71	1.04	609.26	527.89	0.49
HUB	10.27	1.13	8.89	629.59	1.04	605.19	527.63	0.53

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.99	35.61	31.50	4.11	0.93	0.43	1.40
MEAN	33.38	27.58	23.50	4.08	0.93	0.40	1.64
HUB	37.20	10.44	6.50	3.94	0.93	0.39	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	576.9907	290.1284	498.7422	1197.1108	0.4820	-0.2011	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3550	8.8526	604.9812	528.3130	0.5338	30.1874	33.0000	2.8126

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   504.3582   115.1706   491.0326  1203.3077     0.4191     0.0465     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.3288     9.1680   611.2603   528.0437   410.5396     0.0406     0.3354

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   488.4156     0.0000   488.4156  1204.5092     0.4055     0.2573     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.2392   612.5151   528.0272     0.0000     0.0600     0.0393     0.1025

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8810    10.3304     1.1337   631.5974    24.2070   256.6758     1.9897

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 151301.250       0.433     484.218  531565.875   0.126321E-02

Melt Ratio at Stator LE, Throat, TE
0.62560E+00 0.66437E+00 0.77399E+00
 trTOT =     1.3216   Tt4 =   631.5974   T1  =   477.9152

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    958508.56   3067.5718    187.3809      2.4224      0.8578      4.4429      1.3216     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 76.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.778   EfDer =  0.996    SH =  0.277628E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     55.686    3745.057       4.265     477.915       1.000       1.000       0.980
 W Kg/sec =  25.312  Wdry =  55.671  WH2O = 0.015  lbm/sec   H2O =   0.099g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     184.250    3901.564       1.381       0.248      53.357      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 151092.641   43689.543       1.542     831.557     539.393     619.754       1.149

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   436.08    -0.15   436.08     0.42     0.77   702.38
 MEAN    17.06     0.00    -0.02   436.08    -0.15   436.08     0.42     0.68
 HUB     12.51     0.00    -0.02   436.08    -0.15   436.08     0.42     0.57

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.11    50.47     6.64   674.23   803.08     3.79   462.63   461.72     6.71
 MEAN    51.98    47.20     4.78   557.56   707.95     3.79   462.63   461.72     6.71
 HUB     43.16    38.62     4.54   408.85   597.87     3.79   462.63   461.72     6.71

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   673.07   366.57   564.49  1068.23      0.63     7.29     6.52    16.04
 MEAN    18.04   711.10   411.74   579.77  1062.72      0.67     7.43     6.80    12.53
 HUB     15.00   824.33   551.15   612.98  1052.00      0.78     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    674.23   642.88   307.65     0.60  7565.51      0.92     0.91
 MEAN   589.45   606.39   177.71     0.57  7428.73      0.92     0.91     0.91     1.29
 HUB    490.23   616.00    60.92     0.59  8269.14      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.56     1.30     4.27   517.67     1.08   481.25   484.36     4.22
 MEAN     5.53     1.30     4.11   516.95     1.08   476.30   484.39     5.03
 HUB      5.69     1.33     3.81   521.36     1.09   466.74   487.92     7.13

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.00    28.59    24.20     4.39     0.93     0.33     1.80
 MEAN    35.38    17.04    12.70     4.34     0.92     0.28     2.22
 HUB     41.96    -5.68    -9.30     3.62     0.92     0.13     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.996       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   756.0515   410.9411   634.6190  1058.7043     0.7141    -0.0822     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.5778     3.9857   472.7205   485.7346     5.8966    32.9247    35.4000     2.4753

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   600.3259   146.8580   582.0858  1077.5331     0.5571     0.2888     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.5478     4.5049   489.6975   484.3321   554.9116     0.0296     0.4051

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   596.6708     0.0000   596.6708  1077.8917     0.5536     0.3209     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.4966   490.0531   484.4307     0.0000     0.0600     0.0457     0.2834
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8674     5.5232     1.2951   518.6562    40.7432   224.7102     1.7419

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 253520.906       0.558     797.802  605759.625   0.419242E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.734   EfDer =  0.999    SH =  0.598719E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     55.686    3745.057       5.523     518.656       1.000       1.000       0.980
 W Kg/sec =  25.312  Wdry =  55.653  WH2O = 0.033  lbm/sec   H2O =   0.246g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    148.204    3745.215       1.381       0.249      53.368      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 130775.148   43684.035       1.361     590.487     433.960     468.502       1.080

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   531.52    -0.18   531.52     0.49     0.79   671.62
 MEAN    18.08     0.00    -0.02   531.52    -0.18   531.52     0.49     0.73
 HUB     15.21     0.00    -0.02   531.52    -0.18   531.52     0.49     0.67

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.65    46.36     5.29   671.61   856.63     4.70   495.97   484.77     4.30
 MEAN    48.03    42.30     5.73   590.83   794.86     4.70   495.97   484.77     4.30
 HUB     43.09    37.84     5.25   497.09   727.87     4.70   495.97   484.77     4.30

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   602.13   294.14   525.39  1111.45     0.54     2.33     2.04     9.02
 MEAN    18.01   618.67   310.93   534.86  1107.43     0.56     2.40     2.13     7.35
 HUB     15.22   674.33   397.09   545.02  1103.74     0.61     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    667.36   644.46   373.22     0.58  6010.12     0.92     0.91
 MEAN   588.60   602.64   277.67     0.54  5603.14     0.92     0.91     0.91     1.43
 HUB    497.51   554.19   100.42     0.50  6047.69     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.72     1.22     5.52   550.19     1.06   521.09   498.85     2.08
 MEAN     6.63     1.20     5.38   548.06     1.06   517.33   498.09     2.32
 HUB      6.73     1.22     5.25   550.39     1.06   513.88   499.42     2.57

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.24    35.39    31.50     3.89     0.93     0.37     1.40
 MEAN    30.17    27.44    23.50     3.94     0.92     0.36     1.63
 HUB     36.08    10.44     6.50     3.94     0.92     0.38     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.999       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   693.6453   311.8022   619.6153  1100.5236     0.6303    -0.1920     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   6.6810     5.1291   510.9293   499.2539     2.8390    26.7124    30.6000     3.8876

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   584.1136   123.8362   570.8356  1112.5602     0.5250     0.1133     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     6.6572     5.5303   522.1622   498.4473   491.5697     0.0282     0.2784

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   612.3513     0.0000   612.3513  1109.6455     0.5518     0.1803     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4089	519.4540	498.6560	0.0000	0.0600	0.0450	0.0208

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8706	6.6351	1.2013	549.5466	30.8923	257.0409	1.9926

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
192467.250	0.432	605.673	544973.500	0.683160E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.999 EfDer = 0.999 SH = 0.810314E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
55.686	3745.057	6.635	549.546	1.000	1.000	0.980

W Kg/sec = 25.312 Wdry = 55.641 WH2O = 0.045 lbm/sec H2O = 0.385g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
126.987	3638.433	1.380	0.249	53.375	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
112973.289	43680.402	1.467	545.479	371.902	424.468	1.141

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	497.05	-0.17	497.05	0.44	0.73	637.23
MEAN	17.74	0.00	-0.02	497.05	-0.17	497.05	0.44	0.68	
HUB	15.05	0.00	-0.02	497.05	-0.17	497.05	0.44	0.62	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.85	46.36	6.49	655.92	823.12	5.81	529.73	498.40	2.08
MEAN	49.40	43.40	6.00	579.73	763.77	5.81	529.73	498.40	2.08
HUB	44.71	38.84	5.87	491.86	699.40	5.81	529.73	498.40	2.08

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	576.61	294.49	495.74	1145.37	0.50	2.26	1.98	8.75
MEAN	17.51	591.27	309.86	503.57	1141.72	0.52	2.34	2.07	6.78
HUB	14.85	643.66	390.04	512.03	1138.32	0.57	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	647.43	608.54	352.94	0.53	5837.28	0.92	0.91		
MEAN	572.15	567.79	262.29	0.50	5427.54	0.92	0.91	0.91	1.46
HUB	485.32	520.82	95.28	0.46	5794.69	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.95	1.20	6.70	580.15	1.06	553.48	510.59	1.18
MEAN	7.85	1.18	6.55	578.00	1.05	549.96	509.88	1.29
HUB	7.94	1.20	6.41	579.92	1.06	546.69	510.86	1.40

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.71	35.45	31.50	3.95	0.93	0.39	1.40
MEAN	31.60	27.51	23.50	4.01	0.92	0.38	1.62
HUB	37.30	10.54	6.50	4.04	0.92	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	656.4210	311.8889	577.5931	1136.3044	0.5777	-0.1735	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8965	6.3164	544.8093	510.7370	1.4863	28.3682	31.5000	3.1318

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	557.0777	121.5227	543.6614	1146.3429	0.4860	0.1206	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8764	6.7158	554.4743	510.1889	451.3937	0.0247	0.3043

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	568.8293	0.0000	568.8293	1145.2152	0.4967	0.2123	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6518	553.4150	510.2595	0.0000	0.0600	0.0400	0.0735

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8774	7.8558	1.1840	579.3530	29.8113	245.1777	1.9006

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
185931.969	0.444	585.107	520347.375	0.920909E-03

Melt Ratio at Stator LE, Throat, TE
0.20602E-01 0.32699E-01 0.72929E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.405 EfDer = 1.000 SH = 0.105086E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
55.686	3745.057	7.856	579.351	1.000	1.000	0.980

W Kg/sec = 25.312 Wdry = 55.628 WH2O = 0.059 lbm/sec H2O = 0.570g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
110.126	3543.602	1.380	0.249	53.382	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
98851.281	43676.273	1.591	513.330	322.588	395.845	1.227

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	462.16	-0.16	462.16	0.40	0.68	595.57
MEAN	16.97	0.00	-0.02	462.16	-0.16	462.16	0.40	0.63	
HUB	14.32	0.00	-0.02	462.16	-0.16	462.16	0.40	0.57	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.72	46.36	7.36	629.45	781.02	7.04	562.24	510.10	1.16
MEAN	50.20	43.80	6.40	554.63	722.07	7.04	562.24	510.10	1.16
HUB	45.37	37.84	7.53	468.00	657.85	7.04	562.24	510.10	1.16

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	545.12	287.01	463.45	1176.31	0.46	2.16	1.89	8.34
MEAN	16.57	556.26	296.81	470.45	1172.68	0.47	2.24	1.97	6.35
HUB	13.89	601.73	365.55	477.97	1169.25	0.51	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	617.03	568.94	330.02	0.48	5421.87	0.92	0.91		
MEAN	541.66	530.36	244.85	0.45	4922.00	0.92	0.91	0.91	1.48
HUB	453.95	486.07	88.40	0.42	5079.82	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.21	1.17	7.97	607.74	1.05	583.93	520.42	0.74
MEAN	9.08	1.16	7.80	605.12	1.04	580.33	519.58	0.80
HUB	9.12	1.16	7.63	605.95	1.05	576.94	520.04	0.86

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.77	35.45	31.50	3.95	0.93	0.40	1.40
MEAN	32.25	27.50	23.50	4.00	0.93	0.39	1.62
HUB	37.41	10.48	6.50	3.98	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	600.8248	298.4795	521.4407	1169.6094	0.5137	-0.1196	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1253	7.6404	577.3578	520.1320	0.8532	29.7874	32.4000	2.6126

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	516.1766	115.7633	503.0280	1177.2487	0.4385	0.1471	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1100     7.9972   584.9274   519.7866   432.2457     0.0214     0.3271

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   511.9218     0.0000   511.9218  1177.5626     0.4347     0.2384     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.9943   585.2723   519.7507     0.0000     0.0600     0.0389     0.1450

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8795     9.0865     1.1567   606.2554    26.9187   247.3722     1.9176

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 168086.203       0.441     528.949  514189.000   0.113342E-02

Melt Ratio at Stator LE, Throat, TE
0.24754E+00 0.28136E+00 0.37128E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.732   EfDer =  1.000    SH =  0.122810E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     55.686    3745.057       9.087     606.251       1.000       1.000       0.980
 W Kg/sec =  25.312  Wdry =  55.618  WH2O = 0.068  lbm/sec   H2O =   0.750g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     97.395    3464.087       1.379       0.250      53.388      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  87772.859   43673.223       1.786     509.668     285.348     384.739       1.348

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   413.31    -0.14   413.31     0.35     0.61   553.79
 MEAN    15.91     0.00    -0.02   413.31    -0.14   413.31     0.35     0.56
 HUB     13.07     0.00    -0.02   413.31    -0.14   413.31     0.35     0.50

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.39    47.36     8.03   598.73   727.65     8.36   592.58   519.62     0.69
 MEAN    51.53    44.80     6.73   520.07   664.41     8.36   592.58   519.62     0.69
 HUB     45.95    38.84     7.11   427.15   594.48     8.36   592.58   519.62     0.69

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   507.09   287.06   418.01  1204.70      0.42     2.05     1.78     7.43
 MEAN    15.50   511.43   284.59   424.93  1200.54      0.43     2.13     1.86     5.75
 HUB     12.59   544.95   331.88   432.23  1196.54      0.46     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    586.31   514.09   299.26     0.43  5152.39      0.92     0.91
 MEAN   506.49   479.38   221.90     0.40  4412.72      0.92     0.91     0.91     1.52
 HUB    411.46   439.50    79.58     0.37  4180.22      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.50     1.16     9.31   633.20     1.04   612.62   528.78     0.47
 MEAN    10.29     1.13     9.10   629.33     1.04   608.39   527.55     0.51
 HUB     10.23     1.13     8.89   628.11     1.04   604.34   527.26     0.55

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.48    35.60    31.50     4.10     0.93     0.43     1.40
 MEAN    33.81    27.57    23.50     4.07     0.93     0.41     1.64
 HUB     37.52    10.43     6.50     3.93     0.93     0.40     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   569.1010   289.8081   489.7828  1196.4318     0.4757    -0.1983     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.3153     8.8540   604.2960   527.9634     0.5545    30.6131    33.0000     2.3869
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   495.1512   113.0682   482.0688  1202.6434     0.4117     0.0582     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500    10.2914     9.1725   610.5876   527.6946   410.5396     0.0393     0.3414

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   479.6475     0.0000   479.6475  1203.7889     0.3984     0.2642     0.5109

Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     9.2401   611.7849   527.6777     0.0000     0.0600     0.0386     0.1127

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.8822    10.2923     1.1327   630.1869    23.9599   254.1729     1.9703

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 149766.250       0.436     471.298  522331.156   0.128931E-02

Melt Ratio at Stator LE, Throat, TE
0.63385E+00 0.67294E+00 0.78322E+00
 trTOT =     1.3186   Tt4 =   630.1869   T1  =   477.9151

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    949772.56   2988.8291    184.2502      2.4134      0.8616      4.7778      1.3186     37.3740
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25µm, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.828   EfDer =  0.984    SH =  0.565046E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     63.099    3888.739       4.265     457.736       1.000       1.000       0.980
 W Kg/sec =  28.681  Wdry =  63.095  WH2O = 0.004  lbm/sec   H2O =   0.020g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    204.316    4139.589       1.381       0.248      53.350      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 168200.719   49509.492       1.390     831.557     598.054     619.754       1.036

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   485.45    -0.17   485.45     0.48     0.84   745.23
 MEAN    17.06     0.00    -0.02   485.45    -0.17   485.45     0.48     0.74
 HUB     12.51     0.00    -0.02   485.45    -0.17   485.45     0.48     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.27    50.47     4.80   700.09   852.07     3.66   438.78   448.47     4.25
 MEAN    50.03    47.20     2.83   578.95   755.67     3.66   438.78   448.47     4.25
 HUB     41.18    38.62     2.56   424.53   645.01     3.66   438.78   448.47     4.25

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   728.08   352.72   636.94  1038.54     0.70     7.29     6.52    16.04
 MEAN    18.04   773.21   411.18   654.82  1033.17     0.75     7.43     6.80    12.53
 HUB     15.00   914.31   580.05   706.75  1019.14     0.90     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    700.09   725.50   347.37     0.70  7280.03     0.92     0.90
 MEAN   612.06   684.94   200.88     0.66  7418.92     0.92     0.90     0.90     1.21
 HUB    509.03   710.31    71.02     0.70  8702.89     0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.60     1.31     4.05   497.48     1.09   454.84   474.07     2.25
 MEAN     5.63     1.32     3.90   498.24     1.09   450.15   474.66     2.73
 HUB      5.89     1.38     3.51   505.25     1.10   438.01   479.32     4.55

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.98    28.61    24.20     4.41     0.93     0.26     1.80
 MEAN    32.13    17.05    12.70     4.35     0.91     0.22     2.22
 HUB     39.38    -5.74    -9.30     3.56     0.91     0.06     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.984       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   836.4642   410.3824   728.8749  1026.1431     0.8152    -0.1085     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.6893     3.6930   444.0413   476.0930     3.5478    29.3811    35.4000     6.0190

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   681.8669   166.8055   661.1493  1047.7263     0.6508     0.2264     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.6277     4.2476   462.9241   475.3464   554.9116     0.0426     0.3574

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   684.2635     0.0000   684.2635  1047.4098     0.6533     0.2509     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.1938	462.6645	475.2309	0.0000	0.0600	0.0743	0.1979

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8212	5.5678	1.3056	500.3218	42.5867	238.3169	1.8474

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
264745.156	0.540	944.023	727553.000	0.632136E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.421 EfDer = 0.989 SH = 0.704128E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.099	3888.739	5.568	500.321	1.000	1.000	0.980

W Kg/sec = 28.681 Wdry = 63.095 WH2O = 0.004 lbm/sec H2O = 0.029g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
163.614	3959.516	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
147242.313	49509.223	1.233	590.487	478.927	468.502	0.978

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	598.46	-0.21	598.46	0.57	0.87	710.05
MEAN	18.08	0.00	-0.02	598.46	-0.21	598.46	0.57	0.81	
HUB	15.21	0.00	-0.02	598.46	-0.21	598.46	0.57	0.75	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.37	46.36	3.01	697.38	919.12	4.49	471.52	475.12	1.35
MEAN	45.72	42.30	3.42	613.50	857.19	4.49	471.52	475.12	1.35
HUB	40.79	37.84	2.95	516.16	790.43	4.49	471.52	475.12	1.35

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	648.35	273.86	587.67	1085.64	0.60	2.33	2.04	9.02
MEAN	18.01	668.16	299.61	597.22	1082.17	0.62	2.40	2.13	7.35
HUB	15.22	729.42	403.27	607.81	1079.06	0.68	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	692.97	721.80	419.10	0.66	5596.52	0.92	0.90		
MEAN	611.18	673.61	311.57	0.62	5399.68	0.92	0.90	0.90	1.37
HUB	516.60	618.28	113.34	0.57	6142.06	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.76	1.21	5.33	530.87	1.06	497.06	490.55	0.56
MEAN	6.72	1.21	5.21	529.79	1.06	493.89	490.08	0.62
HUB	6.89	1.24	5.09	533.85	1.07	491.06	492.05	0.68

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	24.99	35.50	31.50	4.00	0.93	0.32	1.40
MEAN	26.64	27.55	23.50	4.05	0.92	0.32	1.63
HUB	33.56	10.56	6.50	4.06	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.989	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	767.0062	300.4507	705.7109	1071.4673	0.7158	-0.2388	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7760	4.8342	484.1976	491.0187	0.8587	23.0615	30.6000	7.5385

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	663.6368	140.6957	648.5511	1084.5537	0.6119	0.0172	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7247	5.2383	496.0869	490.7155	491.5697	0.0425	0.2183

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	707.2953	0.0000	707.2953	1079.2643	0.6553	0.0939	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0166	491.2769	490.6606	0.0000	0.0600	0.0761	-0.1231

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8214	6.6715	1.1982	531.5018	31.1816	281.6234	2.1831

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
193915.484	0.404	691.460	658714.000	0.733452E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.781 EfDer = 0.991 SH = 0.781138E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.099	3888.739	6.672	531.501	1.000	1.000	0.980

W Kg/sec = 28.681 Wdry = 63.094 WH2O = 0.005 lbm/sec H2O = 0.037g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
140.737	3841.621	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
126819.922	49509.074	1.324	545.479	411.979	424.468	1.030

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	557.98	-0.19	557.98	0.51	0.80	672.82
MEAN	17.74	0.00	-0.02	557.98	-0.19	557.98	0.51	0.75	
HUB	15.05	0.00	-0.02	557.98	-0.19	557.98	0.51	0.69	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.68	46.36	4.32	681.09	880.62	5.60	506.47	490.51	0.45
MEAN	47.18	43.40	3.78	601.97	820.94	5.60	506.47	490.51	0.45
HUB	42.48	38.84	3.64	510.73	756.56	5.60	506.47	490.51	0.45

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	618.86	276.78	553.52	1121.66	0.55	2.26	1.98	8.75
MEAN	17.51	636.80	300.32	561.54	1118.44	0.57	2.34	2.07	6.78
HUB	14.85	694.79	396.66	570.43	1115.51	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	672.27	680.28	395.48	0.61	5486.94	0.92	0.91		
MEAN	594.10	633.74	293.78	0.57	5260.97	0.92	0.91	0.91	1.39
HUB	503.94	580.43	107.28	0.52	5893.32	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.99	1.20	6.51	561.44	1.06	530.65	503.61	0.22
MEAN	7.93	1.19	6.38	560.21	1.05	527.61	503.11	0.24
HUB	8.10	1.21	6.25	563.66	1.06	524.85	504.58	0.26

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.57	35.55	31.50	4.05	0.93	0.34	1.40
MEAN	28.14	27.62	23.50	4.12	0.92	0.34	1.62
HUB	34.81	10.65	6.50	4.15	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.991	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	718.9197	302.2900	652.2778	1110.5454	0.6474	-0.2067	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9908	6.0488	520.2238	503.7971	0.2993	24.8648	31.5000	6.6352

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	629.3885	137.2968	614.2308	1120.8640	0.5615	0.0311	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.9493	6.4342	529.9252	503.6181	451.3937	0.0356	0.2515

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	646.8536	0.0000	646.8536	1118.9465	0.5781	0.1408	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.3223	528.1362	503.5388	0.0000	0.0600	0.0613	-0.0378

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8432	7.9074	1.1852	561.7680	30.2684	267.1887	2.0712

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
188299.844	0.417	671.436	622501.125	0.824291E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 4.357 EfDer = 0.994 SH = 0.905579E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.099	3888.739	7.907	561.767	1.000	1.000	0.980

W Kg/sec = 28.681 Wdry = 63.093 WH2O = 0.006 lbm/sec H2O = 0.050g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
122.075	3736.701	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
110335.977	49508.832	1.436	513.330	357.368	395.845	1.108

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	515.86	-0.18	515.86	0.46	0.74	628.03
MEAN	16.97	0.00	-0.02	515.86	-0.18	515.86	0.46	0.68	
HUB	14.32	0.00	-0.02	515.86	-0.18	515.86	0.46	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.73	46.36	5.37	653.60	832.79	6.87	540.38	503.48	0.19
MEAN	48.16	43.80	4.36	575.91	773.30	6.87	540.38	503.48	0.19
HUB	43.30	37.84	5.46	485.96	708.83	6.87	540.38	503.48	0.19

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	582.63	273.01	514.71	1154.87	0.50	2.16	1.89	8.34
MEAN	16.57	597.13	289.60	522.20	1151.46	0.52	2.24	1.97	6.35
HUB	13.89	648.03	372.37	530.36	1148.31	0.56	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	640.70	632.55	367.69	0.55	5157.92	0.92	0.91		
MEAN	562.45	589.18	272.84	0.51	4802.88	0.92	0.91	0.91	1.42
HUB	471.37	539.52	98.99	0.47	5174.82	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.29	1.18	7.83	589.90	1.05	562.62	514.52	0.11
MEAN	9.19	1.16	7.67	587.96	1.05	559.31	513.80	0.12
HUB	9.30	1.18	7.51	589.99	1.05	556.24	514.59	0.13

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	27.94	35.54	31.50	4.04	0.93	0.36	1.40
MEAN	29.01	27.59	23.50	4.09	0.92	0.35	1.62
HUB	35.07	10.57	6.50	4.07	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	651.0905	291.2332	582.3246	1147.2043	0.5675	-0.1378	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.2454	7.4505	555.2249	514.2906	0.1367	26.5706	32.4000	5.8294

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   577.4880   129.5137   562.7775  1154.6886     0.5001     0.0721     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.2148     7.7842   562.4894   514.1835   432.2457     0.0292     0.2813

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   572.9138     0.0000   572.9138  1155.0992     0.4960     0.1836     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.7801   562.9142   514.1195     0.0000     0.0600     0.0480     0.0695

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8609     9.1849     1.1615   589.2838    27.5183   267.5846     2.0743

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 171269.047       0.417     610.708  609528.563   0.981847E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 4.956   EfDer =  0.997    SH =  0.113692E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     63.099    3888.739       9.185     589.283       1.000       1.000       0.980
 W Kg/sec =  28.681  Wdry =  63.092  WH2O = 0.007  lbm/sec   H2O =   0.071g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    107.640    3648.418       1.381       0.249      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  97092.469   49508.383       1.617     509.668     315.134     384.739       1.221

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   457.20    -0.16   457.20     0.39     0.66   583.26
 MEAN    15.91     0.00    -0.02   457.20    -0.16   457.20     0.39     0.61
 HUB     13.07     0.00    -0.02   457.20    -0.16   457.20     0.39     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.68    47.36     6.32   621.70   771.84     8.27   572.49   514.10     0.11
 MEAN    49.76    44.80     4.96   540.02   707.69     8.27   572.49   514.10     0.11
 HUB     44.14    38.84     5.30   443.54   637.10     8.27   572.49   514.10     0.11

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   537.77   278.56   460.00  1185.84      0.45     2.05     1.78     7.43
 MEAN    15.50   545.66   280.81   467.86  1181.62      0.46     2.13     1.86     5.75
 HUB     12.59   584.49   338.97   476.17  1177.62      0.50     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    608.81   566.27   330.25     0.48  5000.16      0.92     0.91
 MEAN   525.92   528.17   245.11     0.45  4354.42      0.92     0.91     0.91     1.47
 HUB    427.25   484.28    88.28     0.41  4269.67      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.67     1.16     9.28   616.54     1.05   593.31   523.96     0.07
 MEAN    10.47     1.14     9.06   613.02     1.04   589.11   522.74     0.08
 HUB     10.44     1.14     8.84   612.56     1.04   585.12   522.59     0.09

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.20    35.68    31.50     4.18     0.93     0.39     1.40
 MEAN    30.97    27.65    23.50     4.15     0.92     0.37     1.64
 HUB     35.45    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   613.4089   285.9609   542.6757  1176.2651     0.5215    -0.2186     2.0437
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    Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
   10.4978     8.7420   583.8243   523.0637     0.0895    27.7868    33.0000     5.2132

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   550.2158   125.6423   535.6785  1182.2035     0.4654    -0.0241     2.1315

   BlockageTh  PtTh      PsTh       TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4522     9.0275   589.7280   522.9400   410.5396     0.0512     0.3020

    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   531.6212     0.0000   531.6212  1183.7972     0.4491     0.2178     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.1244   591.3445   522.9550     0.0000     0.0600     0.0458     0.0421

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
    0.8686    10.4601     1.1388   614.0372    24.7566   271.6182     2.1056

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 154167.953       0.416     549.729  613623.750   0.125394E-03

Melt Ratio at Stator LE, Throat, TE
0.24461E-01 0.31499E-01 0.51742E-01
 trTOT =     1.3415   Tt4 =   614.0372   T1  =   457.7363

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    972397.50   3467.3569    204.3162      2.4527      0.8226      2.8280      1.3415     37.3740
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*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 84.0%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.059   EfDer =  0.993    SH =  0.578964E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     58.945    3728.503       4.265     457.736       1.000       1.000       0.980
 W Kg/sec =  26.793  Wdry =  58.942  WH2O = 0.003  lbm/sec   H2O =   0.021g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     190.865   3969.018       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 154352.500   46250.105       1.488     831.557     558.684     619.754       1.109

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   445.48    -0.15   445.48     0.44     0.79   714.52
 MEAN    17.06     0.00    -0.02   445.48    -0.15   445.48     0.44     0.70
 HUB     12.51     0.00    -0.02   445.48    -0.15   445.48     0.44     0.59

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.44    50.47     5.97   671.25   805.75     3.75   441.77   448.42     3.83
 MEAN    51.26    47.20     4.06   555.09   711.87     3.75   441.77   448.42     3.83
 HUB     42.43    38.62     3.81   407.04   603.54     3.75   441.77   448.42     3.83

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   679.57   355.49   579.17  1043.27      0.65     7.29     6.52    16.04
 MEAN    18.04   719.33   404.42   594.88  1037.93      0.69     7.43     6.80    12.53
 HUB     15.00   838.52   551.01   632.06  1026.61      0.82     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    671.25   659.65   315.75     0.63  7337.02      0.92     0.91
 MEAN   586.84   622.23   182.43     0.60  7296.69      0.92     0.91     0.91     1.26
 HUB    488.06   635.19    62.95     0.62  8267.03      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.56     1.30     4.20   496.14     1.08   458.99   473.24     1.99
 MEAN     5.56     1.30     4.05   495.93     1.08   454.31   473.24     2.39
 HUB      5.75     1.35     3.72   501.01     1.09   444.45   476.57     3.59

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.54    28.60    24.20     4.40     0.93     0.30     1.80
 MEAN    34.21    17.05    12.70     4.35     0.92     0.26     2.22
 HUB     41.08    -5.69    -9.30     3.61     0.92     0.11     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   768.4450   403.6316   653.9031  1033.2190     0.7437    -0.0896     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.6062     3.8987   450.1941   474.3752     2.8573    31.6856    35.4000     3.7144

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   616.9355   150.9213   598.1908  1052.4083     0.5862     0.2668     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5688     4.4250   467.0784   473.8753   554.9116     0.0329     0.3884

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   614.3217     0.0000   614.3217  1052.6812     0.5836     0.2982     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4078   467.3397   473.8119     0.0000     0.0600     0.0529     0.2564
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8558     5.5361     1.2981   497.6910    39.9567   229.5995     1.7798

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 248407.484       0.551     827.454  667652.500   0.660535E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 4.916   EfDer =  0.997    SH =  0.750776E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     58.945    3728.503       5.536     497.691       1.000       1.000       0.980
 W Kg/sec =  26.793  Wdry =  58.941  WH2O = 0.004  lbm/sec   H2O =   0.032g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    153.315    3806.385       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 133984.172   46249.797       1.316     590.487     448.781     468.502       1.044

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   544.57    -0.19   544.57     0.51     0.81   682.59
 MEAN    18.08     0.00    -0.02   544.57    -0.19   544.57     0.51     0.76
 HUB     15.21     0.00    -0.02   544.57    -0.19   544.57     0.51     0.69

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     50.85    46.36     4.49   668.64   862.49     4.63   473.84   473.76     1.34
 MEAN    47.22    42.30     4.92   588.22   801.73     4.63   473.84   473.76     1.34
 HUB     42.27    37.84     4.43   494.89   735.98     4.63   473.84   473.76     1.34

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   607.03   282.12   537.49  1086.90      0.56     2.33     2.04     9.02
 MEAN    18.01   624.53   301.68   546.84  1083.13      0.58     2.40     2.13     7.35
 HUB     15.22   681.24   392.31   556.93  1079.69      0.63     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    664.41   659.58   382.29     0.61  5764.77      0.92     0.91
 MEAN   586.00   616.33   284.32     0.57  5436.57      0.92     0.91     0.91     1.40
 HUB    495.32   566.38   103.00     0.52  5975.02      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.73     1.22     5.46   527.86     1.06   498.23   489.32     0.59
 MEAN     6.65     1.20     5.33   526.14     1.06   494.77   488.52     0.65
 HUB      6.77     1.22     5.20   528.96     1.06   491.64   489.94     0.72

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     27.69    35.42    31.50     3.92     0.93     0.35     1.40
 MEAN    28.88    27.47    23.50     3.97     0.92     0.35     1.63
 HUB     35.16    10.48     6.50     3.98     0.92     0.37     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   705.0492   302.5230   636.8471  1075.3116     0.6557    -0.2057     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7048     5.0403   487.6821   489.3368     0.8298    25.4092    30.6000     5.1908

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   600.1201   127.2297   586.4783  1087.3896     0.5519     0.0812     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6741     5.4398   498.6927   489.1161   491.5697     0.0321     0.2582

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   631.5406     0.0000   631.5406  1083.9751     0.5826     0.1527     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.2945	495.5831	489.0909	0.0000	0.0600	0.0532	-0.0233

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8584	6.6447	1.2003	527.6512	29.9619	265.3938	2.0573

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
186336.563	0.422	620.694	601507.250	0.787426E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.212 EfDer = 0.998 SH = 0.845991E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.945	3728.503	6.645	527.651	1.000	1.000	0.980

W Kg/sec = 26.793 Wdry = 58.940 WH2O = 0.005 lbm/sec H2O = 0.042g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
131.524	3696.742	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
115635.320	46249.621	1.417	545.479	385.010	424.468	1.102

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	508.77	-0.18	508.77	0.46	0.76	647.44
MEAN	17.74	0.00	-0.02	508.77	-0.18	508.77	0.46	0.70	
HUB	15.05	0.00	-0.02	508.77	-0.18	508.77	0.46	0.64	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.09	46.36	5.73	653.02	827.96	5.74	506.84	488.99	0.49
MEAN	48.61	43.40	5.21	577.16	769.53	5.74	506.84	488.99	0.49
HUB	43.92	38.84	5.08	489.69	706.27	5.74	506.84	488.99	0.49

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	580.62	283.35	506.78	1120.89	0.52	2.26	1.98	8.75
MEAN	17.51	596.24	301.23	514.55	1117.44	0.53	2.34	2.07	6.78
HUB	14.85	649.74	385.55	522.98	1114.26	0.58	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	644.56	622.34	361.21	0.56	5616.70	0.92	0.91		
MEAN	569.62	580.34	268.39	0.52	5276.56	0.92	0.91	0.91	1.43
HUB	483.18	532.01	97.63	0.48	5728.11	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.95	1.20	6.64	557.04	1.06	529.93	502.16	0.25
MEAN	7.87	1.18	6.50	555.26	1.05	526.68	501.42	0.28
HUB	7.98	1.20	6.36	557.62	1.06	523.68	502.46	0.30

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	29.21	35.48	31.50	3.98	0.93	0.37	1.40
MEAN	30.35	27.55	23.50	4.05	0.92	0.37	1.62
HUB	36.40	10.57	6.50	4.07	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.998	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	665.3503	303.2036	592.2487	1111.4268	0.5986	-0.1838	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9193	6.2333	521.0519	502.0349	0.3261	27.1103	31.5000	4.3897

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	571.3957	124.6461	557.6346	1121.3492	0.5096	0.0901	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8939	6.6265	530.3908	501.8993	451.3937	0.0277	0.2859

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	584.1874	0.0000	584.1874	1120.0712	0.5216	0.1895	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.5528	529.2047	501.8584	0.0000	0.0600	0.0444	0.0388

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8702	7.8699	1.1844	556.6345	28.9854	252.6940	1.9589

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
180322.734	0.434	600.661	572530.938	0.899993E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 5.675 EfDer = 0.999 SH = 0.998359E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.945	3728.503	7.870	556.634	1.000	1.000	0.980

W Kg/sec = 26.793 Wdry = 58.939 WH2O = 0.006 lbm/sec H2O = 0.056g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
114.058	3599.214	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
100989.578	46249.348	1.537	513.330	333.901	395.845	1.186

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	472.16	-0.16	472.16	0.42	0.69	604.92
MEAN	16.97	0.00	-0.02	472.16	-0.16	472.16	0.42	0.64	
HUB	14.32	0.00	-0.02	472.16	-0.16	472.16	0.42	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.01	46.36	6.65	626.67	784.76	6.99	538.72	501.82	0.23
MEAN	49.48	43.80	5.68	552.18	726.65	6.99	538.72	501.82	0.23
HUB	44.63	37.84	6.79	465.93	663.46	6.99	538.72	501.82	0.23

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	548.16	277.22	472.89	1152.04	0.48	2.16	1.89	8.34
MEAN	16.57	560.31	289.17	479.93	1148.55	0.49	2.24	1.97	6.35
HUB	13.89	606.91	361.52	487.49	1145.27	0.53	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	614.30	580.73	337.08	0.50	5237.09	0.92	0.91		
MEAN	539.27	541.18	250.10	0.47	4795.43	0.92	0.91	0.91	1.46
HUB	451.94	495.81	90.43	0.43	5023.77	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.23	1.17	7.92	584.02	1.05	559.87	512.84	0.14
MEAN	9.11	1.16	7.76	581.71	1.05	556.48	511.96	0.15
HUB	9.17	1.17	7.59	582.91	1.05	553.30	512.44	0.16

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.38	35.48	31.50	3.98	0.93	0.38	1.40
MEAN	31.07	27.52	23.50	4.02	0.92	0.38	1.62
HUB	36.56	10.51	6.50	4.01	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	607.0475	290.7963	532.8642	1145.1871	0.5301	-0.1255	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1561	7.5793	553.2710	512.4063	0.1636	28.6223	32.4000	3.7777

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	527.8383	118.3787	514.3926	1152.6376	0.4579	0.1209	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1370     7.9276   560.4932   512.3229   432.2457     0.0236     0.3103

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   523.5485     0.0000   523.5485  1152.9868     0.4541     0.2187     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.9242   560.8571   512.2714     0.0000     0.0600     0.0415     0.1185

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8746     9.1116     1.1578   582.8776    26.2455   254.3253     1.9715

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 163348.453       0.433     544.119  564186.625   0.109066E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.077   EfDer =  0.999    SH =  0.126976E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     58.945    3728.503       9.112     582.877       1.000       1.000       0.980
 W Kg/sec =  26.793  Wdry =  58.938  WH2O = 0.007  lbm/sec   H2O =   0.081g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    100.809    3517.256       1.381       0.249      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  89455.836   46248.852       1.727     509.668     295.137     384.739       1.304

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   421.24    -0.15   421.24     0.36     0.63   562.29
 MEAN   15.91     0.00    -0.02   421.24    -0.15   421.24     0.36     0.58
 HUB    13.07     0.00    -0.02   421.24    -0.15   421.24     0.36     0.52

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    54.76    47.36     7.40   596.08   730.02     8.33   568.62   512.26     0.14
 MEAN   50.88    44.80     6.08   517.77   667.59     8.33   568.62   512.26     0.14
 HUB    45.28    38.84     6.44   425.26   598.68     8.33   568.62   512.26     0.14

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   508.71   278.84   425.48  1180.78      0.43     2.05     1.78     7.43
 MEAN   15.50   514.25   278.13   432.55  1176.68      0.44     2.13     1.86     5.75
 HUB    12.59   549.07   328.43   440.01  1172.75      0.47     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   583.72   523.43   304.87     0.44  5005.13      0.92     0.91
 MEAN  504.25   488.09   226.12     0.41  4312.68      0.92     0.91     0.91     1.50
 HUB   409.65   447.44    81.21     0.38  4136.88      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.54     1.16     9.30   609.04     1.04   588.25   521.97     0.09
 MEAN   10.34     1.13     9.08   605.42     1.04   584.18   520.68     0.10
 HUB    10.28     1.13     8.87   604.50     1.04   580.28   520.37     0.11

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    33.24    35.62    31.50     4.12     0.93     0.42     1.40
 MEAN   32.74    27.60    23.50     4.10     0.93     0.39     1.64
 HUB    36.74    10.46     6.50     3.96     0.93     0.39     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   574.2188   283.2315   499.5068  1172.2566     0.4898    -0.2052     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.3610     8.8118   579.8396   520.9811     0.1124    29.5542    33.0000     3.4458
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   505.4758   115.4258   492.1206  1178.2676     0.4290     0.0291     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.3314     9.1185   585.7991   520.8886   410.5396     0.0427     0.3263

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   489.3237     0.0000   489.3237  1179.5399     0.4148     0.2467     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.1940   587.0901   520.8934     0.0000     0.0600     0.0407     0.0869

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8781    10.3340     1.1342   606.3157    23.4412   260.4281     2.0188

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 145972.719       0.428     486.240  571619.938   0.139584E-03

Melt Ratio at Stator LE, Throat, TE
0.30866E-01 0.38070E-01 0.58341E-01
 trTOT =     1.3246   Tt4 =   606.3157   T1  =   457.7357

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    924388.00   3079.1687    190.8654      2.4232      0.8521      4.0592      1.3246     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 79.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.495   EfDer =  0.995    SH =  0.583609E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     57.623    3683.368       4.265     457.736       1.000       1.000       0.980
 W Kg/sec =  26.192  Wdry =  57.620  WH2O = 0.003  lbm/sec   H2O =   0.022g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    186.586    3920.971       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 150121.750   45213.129       1.523     831.557     546.158     619.754       1.135

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   433.27    -0.15   433.27     0.42     0.77   705.87
 MEAN    17.06     0.00    -0.02   433.27    -0.15   433.27     0.42     0.68
 HUB     12.51     0.00    -0.02   433.27    -0.15   433.27     0.42     0.58

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.85    50.47     6.38   663.12   792.24      3.78   442.64   448.41     3.72
 MEAN    51.69    47.20     4.49   548.37   699.00      3.78   442.64   448.41     3.72
 HUB     42.87    38.62     4.25   402.11   591.22      3.78   442.64   448.41     3.72

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   665.68   356.83   561.96  1044.61      0.64     7.29     6.52    16.04
 MEAN    18.04   703.78   402.82   577.10  1039.26      0.68     7.43     6.80    12.53
 HUB     15.00   817.43   542.92   611.08  1028.52      0.79     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    663.12   640.01   306.29     0.61  7364.56      0.92     0.91
 MEAN   579.74   603.61   176.92     0.58  7267.77      0.92     0.91     0.91     1.28
 HUB    482.15   614.09    60.77     0.60  8145.74      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.56     1.30     4.24   495.82     1.08   460.17   473.04     1.92
 MEAN     5.54     1.30     4.09   495.32     1.08   455.48   472.86     2.31
 HUB      5.71     1.34     3.78   499.86     1.09   446.11   475.84     3.39

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.41    28.59    24.20     4.39     0.93     0.32     1.80
 MEAN    34.92    17.04    12.70     4.34     0.92     0.27     2.22
 HUB     41.62    -5.68    -9.30     3.62     0.92     0.13     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.995       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   749.5178   402.0350   632.5700  1035.0693     0.7241    -0.0849     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.5841     3.9540   451.8101   473.9319     2.7097    32.4383    35.4000     2.9617

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   598.0381   146.2984   579.8676  1053.7025     0.5676     0.2799     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5517     4.4735   468.2299   473.4813   554.9116     0.0307     0.3983

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   594.7446     0.0000   594.7446  1054.0392     0.5643     0.3119     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4624   468.5480   473.4292     0.0000     0.0600     0.0482     0.2728
```

```
    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8636     5.5243     1.2954   496.9954    39.2612   226.6529     1.7570

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 244087.266       0.555     794.834  649352.188   0.669837E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.403   EfDer =  0.998    SH =  0.765572E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     57.623    3683.368       5.524     496.995       1.000       1.000       0.980
 W Kg/sec =  26.192  Wdry =  57.619  WH2O = 0.004  lbm/sec   H2O =   0.033g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    150.091    3762.938       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 130119.242   45212.813       1.344     590.487     439.345     468.502       1.066

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   528.86    -0.18   528.86     0.50     0.80   674.80
 MEAN    18.08     0.00    -0.02   528.86    -0.18   528.86     0.50     0.74
 HUB     15.21     0.00    -0.02   528.86    -0.18   528.86     0.50     0.68

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.33    46.36     4.97   660.55   846.32     4.67   474.50   473.39     1.34
 MEAN    47.70    42.30     5.40   581.10   785.86     4.67   474.50   473.39     1.34
 HUB     42.76    37.84     4.92   488.90   720.35     4.67   474.50   473.39     1.34

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   595.33   284.87    522.74  1087.29      0.55     2.33     2.04     9.02
 MEAN    18.01   612.01   302.59    531.98  1083.44      0.56     2.40     2.13     7.35
 HUB     15.22   667.28   389.35    541.92  1079.91      0.62     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    656.37   641.30   371.50     0.59  5820.86      0.92     0.91
 MEAN   578.90   599.46   276.32     0.55  5452.86      0.92     0.91     0.91     1.42
 HUB    489.32   551.06    99.97     0.51  5929.87      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.22     5.49   527.09     1.06   498.59   488.99     0.59
 MEAN     6.63     1.20     5.36   525.18     1.06   495.06   488.10     0.66
 HUB      6.74     1.22     5.22   527.65     1.06   491.84   489.35     0.74

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.59    35.40    31.50     3.90     0.93     0.36     1.40
 MEAN    29.63    27.45    23.50     3.95     0.92     0.36     1.63
 HUB     35.70    10.45     6.50     3.95     0.92     0.37     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   687.9528   303.4359  617.4186  1076.3062     0.6392    -0.1972     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6814     5.0917   488.5857   488.8797     0.8248    26.1722    30.6000     4.4278

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   582.1108  123.4116  568.8784  1088.1510     0.5350     0.1001     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6551     5.4901   499.3935   488.6768   491.5697     0.0296     0.2700

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   611.0557     0.0000   611.0557  1085.1047     0.5631     0.1690     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3605	496.6184	488.6581	0.0000	0.0600	0.0480	0.0033

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8663	6.6306	1.2003	526.6395	29.6459	260.4333	2.0189

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
184372.594	0.428	600.382	584345.938	0.804642E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.666 EfDer = 0.999 SH = 0.866735E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.623	3683.368	6.631	526.639	1.000	1.000	0.980

W Kg/sec = 26.192 Wdry = 57.618 WH2O = 0.005 lbm/sec H2O = 0.043g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
128.725	3655.498	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
112423.633	45212.629	1.448	545.479	376.818	424.468	1.126

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	494.64	-0.17	494.64	0.45	0.74	640.22
MEAN	17.74	0.00	-0.02	494.64	-0.17	494.64	0.45	0.69	
HUB	15.05	0.00	-0.02	494.64	-0.17	494.64	0.45	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.53	46.36	6.17	645.12	813.06	5.78	506.97	488.57	0.50
MEAN	49.07	43.40	5.67	570.18	754.96	5.78	506.97	488.57	0.50
HUB	44.37	38.84	5.53	483.76	692.00	5.78	506.97	488.57	0.50

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	569.93	285.39	493.33	1120.71	0.51	2.26	1.98	8.75
MEAN	17.51	584.79	301.65	500.98	1117.21	0.52	2.34	2.07	6.78
HUB	14.85	636.88	382.45	509.26	1113.96	0.57	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	636.76	605.67	351.37	0.54	5657.08	0.92	0.91		
MEAN	562.72	564.93	261.07	0.51	5283.85	0.92	0.91	0.91	1.44
HUB	477.33	518.02	94.88	0.47	5681.92	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.93	1.20	6.66	555.88	1.06	529.76	501.75	0.26
MEAN	7.84	1.18	6.52	553.95	1.05	526.45	500.95	0.29
HUB	7.94	1.20	6.38	556.00	1.06	523.40	501.86	0.31

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.05	35.46	31.50	3.96	0.93	0.38	1.40
MEAN	31.05	27.52	23.50	4.02	0.92	0.37	1.62
HUB	36.91	10.55	6.50	4.05	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	650.5506	303.6282	575.3486	1111.6451	0.5852	-0.1777	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8906	6.2750	521.2572	501.5374	0.3344	27.8219	31.5000	3.6781

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	555.1122	121.0940	541.7433	1121.4686	0.4950	0.1074	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8687	6.6694	530.5053	501.4109	451.3937	0.0258	0.2963

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	567.0255	0.0000	567.0255	1120.3108	0.5061	0.2028	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6027	529.4326	501.3759	0.0000	0.0600	0.0412	0.0592

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8752	7.8474	1.1835	555.2741	28.6367	248.3866	1.9255

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
178155.172	0.439	580.136	557310.063	0.924445E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.082 EfDer = 0.999 SH = 0.102824E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.623	3683.368	7.847	555.274	1.000	1.000	0.980

W Kg/sec = 26.192 Wdry = 57.617 WH2O = 0.006 lbm/sec H2O = 0.058g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
111.682	3559.996	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
98340.547	45212.344	1.570	513.330	326.947	395.845	1.211

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	459.78	-0.16	459.78	0.41	0.68	598.33
MEAN	16.97	0.00	-0.02	459.78	-0.16	459.78	0.41	0.63	
HUB	14.32	0.00	-0.02	459.78	-0.16	459.78	0.41	0.58	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.41	46.36	7.05	619.08	771.27	7.01	538.29	501.34	0.24
MEAN	49.88	43.80	6.08	545.50	713.54	7.01	538.29	501.34	0.24
HUB	45.04	37.84	7.20	460.29	650.70	7.01	538.29	501.34	0.24

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	538.59	278.45	461.03	1151.29	0.47	2.16	1.89	8.34
MEAN	16.57	550.01	289.10	467.91	1147.77	0.48	2.24	1.97	6.35
HUB	13.89	595.32	358.47	475.29	1144.46	0.52	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	606.87	566.05	328.42	0.49	5260.12	0.92	0.91		
MEAN	532.74	527.54	243.64	0.46	4794.15	0.92	0.91	0.91	1.47
HUB	446.47	483.37	88.01	0.42	4981.37	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.20	1.17	7.93	582.45	1.05	559.14	512.35	0.15
MEAN	9.07	1.16	7.77	580.04	1.04	555.73	511.42	0.16
HUB	9.12	1.16	7.60	581.01	1.05	552.53	511.82	0.17

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.13	35.46	31.50	3.96	0.93	0.39	1.40
MEAN	31.71	27.51	23.50	4.01	0.93	0.38	1.62
HUB	37.02	10.49	6.50	3.99	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	594.8403	290.7232	518.9556	1144.6343	0.5197	-0.1222	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1163	7.6006	552.7360	511.8565	0.1721	29.2579	32.4000	3.1421

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	513.9497	115.2639	500.8578	1152.0708	0.4461	0.1353	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.0996	7.9514	559.9420	511.7781	432.2457	0.0223	0.3193

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	509.7524	0.0000	509.7524	1152.4027	0.4423	0.2293	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9481	560.2886	511.7296	0.0000	0.0600	0.0400	0.1329

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8774	9.0754	1.1565	581.1638	25.8920	250.4634	1.9416

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
161148.703	0.438	524.757	550160.250	0.112597E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.425 EfDer = 1.000 SH = 0.131293E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.623	3683.368	9.075	581.163	1.000	1.000	0.980

W Kg/sec = 26.192 Wdry = 57.616 WH2O = 0.008 lbm/sec H2O = 0.083g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
98.796	3479.798	1.381	0.249	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
87281.109	45211.840	1.762	509.668	289.245	384.739	1.330

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	411.00	-0.14	411.00	0.35	0.62	556.31
MEAN	15.91	0.00	-0.02	411.00	-0.14	411.00	0.35	0.57	
HUB	13.07	0.00	-0.02	411.00	-0.14	411.00	0.35	0.51	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.09	47.36	7.73	588.87	718.23	8.33	567.60	511.73	0.15
MEAN	51.23	44.80	6.43	511.50	656.28	8.33	567.60	511.73	0.15
HUB	45.64	38.84	6.80	420.11	587.82	8.33	567.60	511.73	0.15

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	500.59	279.01	415.62	1179.42	0.42	2.05	1.78	7.43
MEAN	15.50	505.42	277.44	422.46	1175.35	0.43	2.13	1.86	5.75
HUB	12.59	539.04	325.48	429.69	1171.45	0.46	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	576.65	511.20	297.64	0.43	5008.09	0.92	0.91		
MEAN	498.15	476.64	220.71	0.41	4301.92	0.92	0.91	0.91	1.51
HUB	404.69	436.93	79.21	0.37	4099.64	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.49	1.16	9.28	607.02	1.04	586.89	521.39	0.10
MEAN	10.28	1.13	9.07	603.38	1.04	582.86	520.08	0.11
HUB	10.22	1.13	8.86	602.33	1.04	578.99	519.71	0.12

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.87	35.61	31.50	4.11	0.93	0.43	1.40
MEAN	33.29	27.58	23.50	4.08	0.93	0.40	1.64
HUB	37.14	10.44	6.50	3.94	0.93	0.39	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	563.2738	282.5283	487.2937	1171.1724	0.4809	-0.2015	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3044	8.8137	578.7642	520.3677	0.1197	30.1048	33.0000	2.8952

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   492.9135   112.5572   479.8902  1177.1956     0.4187     0.0446     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.2783     9.1246   584.7312   520.2816   410.5396     0.0407     0.3339

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   477.3799     0.0000   477.3799  1178.3887     0.4051     0.2556     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.1948   585.9421   520.2842     0.0000     0.0600     0.0395     0.1002

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8801    10.2799     1.1327   604.2406    23.0798   257.1081     1.9931

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 143721.922       0.432     468.009  558359.875   0.144224E-03

Melt Ratio at Stator LE, Throat, TE
0.32609E-01 0.39860E-01 0.60151E-01
 trTOT =     1.3201   Tt4 =   604.2406   T1  =   457.7355

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    911485.69   2968.1169    186.5861      2.4105      0.8584      4.4950      1.3201     37.3740
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*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 76.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.824   EfDer =  0.996    SH =  0.586999E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     56.671    3652.662       4.265     457.735       1.000       1.000       0.980
  W Kg/sec =  25.760  Wdry =  56.668  WH2O = 0.003  lbm/sec   H2O =   0.022g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     183.503   3888.284       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 147119.531   44466.000       1.548     831.557     537.133     619.754       1.154

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   424.61    -0.15   424.61      0.41     0.76   699.99
 MEAN    17.06     0.00    -0.02   424.61    -0.15   424.61      0.41     0.67
 HUB     12.51     0.00    -0.02   424.61    -0.15   424.61      0.41     0.57

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.16    50.47     6.69   657.59   782.89      3.80   443.23   448.41     3.64
 MEAN    52.02    47.20     4.82   543.80   690.05      3.80   443.23   448.41     3.64
 HUB     43.21    38.62     4.59   398.76   582.60      3.80   443.23   448.41     3.64

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   656.09   357.97   549.84  1045.54      0.63     7.29     6.52    16.04
 MEAN    18.04   693.01   401.86   564.60  1040.18      0.67     7.43     6.80    12.53
 HUB     15.00   802.94   537.43   596.56  1029.80      0.78     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    657.59   626.17   299.63     0.60  7387.86      0.92     0.91
 MEAN   574.91   590.53   173.05     0.57  7250.48      0.92     0.91     0.91     1.29
 HUB    478.13   599.50    59.30     0.58  8063.33      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.55     1.30     4.27   495.62     1.08   460.99   472.91     1.88
 MEAN     5.52     1.30     4.12   494.91     1.08   456.28   472.61     2.26
 HUB      5.68     1.33     3.82   499.08     1.09   447.22   475.35     3.26

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.07    28.59    24.20     4.39     0.93     0.33     1.80
 MEAN    35.44    17.04    12.70     4.34     0.92     0.28     2.22
 HUB     42.02    -5.68    -9.30     3.62     0.92     0.14     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.996       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   736.5360   401.0810   617.7535  1036.3201     0.7107    -0.0817     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.5694     3.9915   452.9040   473.6405     2.6162    32.9939    35.4000     2.4061

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   584.8069   143.0616   567.0384  1054.6017     0.5545     0.2895     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.5400     4.5068   469.0307   473.2200   554.9116     0.0294     0.4056

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   581.1714     0.0000   581.1714  1054.9661     0.5509     0.3216     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.4990   469.3737   473.1751     0.0000     0.0600     0.0453     0.2844
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8684     5.5159     1.2934   496.5372    38.8032   224.4702     1.7401

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 241241.625       0.558     772.586  636366.438   0.676811E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.765   EfDer =  0.999    SH =  0.776540E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     56.671    3652.662       5.516     496.537       1.000       1.000       0.980
 W Kg/sec =  25.760  Wdry =  56.667  WH2O = 0.004  lbm/sec   H2O =   0.033g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    147.769    3733.290       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 127406.789   44465.664       1.365     590.487     432.548     468.502       1.083

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   517.84    -0.18   517.84     0.49     0.79   669.48
 MEAN    18.08     0.00    -0.02   517.84    -0.18   517.84     0.49     0.73
 HUB     15.21     0.00    -0.02   517.84    -0.18   517.84     0.49     0.67

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.68     46.36     5.32   655.04   835.15     4.70   474.97   473.15     1.34
 MEAN    48.07     42.30     5.77   576.25   774.87     4.70   474.97   473.15     1.34
 HUB     43.12     37.84     5.28   484.83   709.50     4.70   474.97   473.15     1.34

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   587.25   287.00   512.34  1087.60      0.54     2.33     2.04     9.02
 MEAN    18.01   603.33   303.40   521.49  1083.69      0.56     2.40     2.13     7.35
 HUB     15.22   657.55   387.38   531.32  1080.10      0.61     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    650.90   628.42   363.90     0.58  5864.21      0.92     0.91
 MEAN   574.08   587.56   270.68     0.54  5467.39      0.92     0.91     0.91     1.43
 HUB    485.24   540.26    97.86     0.50  5899.81      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.70     1.22     5.51   526.60     1.06   498.87   488.78     0.60
 MEAN     6.62     1.20     5.38   524.57     1.06   495.29   487.82     0.67
 HUB      6.71     1.22     5.24   526.78     1.06   492.01   488.96     0.75

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.26    35.38    31.50     3.88     0.93     0.37     1.40
 MEAN    30.19    27.43    23.50     3.93     0.92     0.36     1.63
 HUB     36.10    10.44     6.50     3.94     0.92     0.38     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   676.2067   304.2484   603.8943  1076.9996     0.6279    -0.1914     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6653     5.1264   489.2163   488.5790     0.8216    26.7395    30.6000     3.8605

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   569.5397   120.7465   556.5930  1088.7009     0.5231     0.1137     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6418     5.5241   499.8998   488.3870   491.5697     0.0280     0.2786

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   596.9388     0.0000   596.9388  1085.8821     0.5497     0.1806     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4043	497.3317	488.3723	0.0000	0.0600	0.0447	0.0217

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8712	6.6201	1.2002	525.9814	29.4460	256.8549	1.9911

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
183130.641	0.432	586.483	572212.250	0.817418E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 6.002 EfDer = 0.999 SH = 0.882664E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.671	3652.662	6.620	525.981	1.000	1.000	0.980

W Kg/sec = 25.760 Wdry = 56.666 WH2O = 0.005 lbm/sec H2O = 0.044g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
126.719	3627.291	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
110170.609	44465.480	1.471	545.479	370.946	424.468	1.144

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	484.73	-0.17	484.73	0.44	0.73	635.28
MEAN	17.74	0.00	-0.02	484.73	-0.17	484.73	0.44	0.68	
HUB	15.05	0.00	-0.02	484.73	-0.17	484.73	0.44	0.62	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.86	46.36	6.50	639.74	802.77	5.80	507.09	488.30	0.51
MEAN	49.40	43.40	6.00	565.42	744.89	5.80	507.09	488.30	0.51
HUB	44.71	38.84	5.87	479.73	682.10	5.80	507.09	488.30	0.51

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	562.58	287.02	483.85	1120.64	0.50	2.26	1.98	8.75
MEAN	17.51	576.86	302.10	491.43	1117.10	0.52	2.34	2.07	6.78
HUB	14.85	627.94	380.40	499.60	1113.80	0.56	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	631.45	593.93	344.44	0.53	5689.18	0.92	0.91		
MEAN	558.03	554.07	255.93	0.50	5291.76	0.92	0.91	0.91	1.45
HUB	473.35	508.17	92.95	0.46	5651.49	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.92	1.20	6.68	555.14	1.06	529.69	501.49	0.27
MEAN	7.82	1.18	6.54	553.10	1.05	526.35	500.63	0.29
HUB	7.91	1.19	6.39	554.95	1.06	523.25	501.46	0.32

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.68	35.45	31.50	3.95	0.93	0.39	1.40
MEAN	31.58	27.51	23.50	4.01	0.93	0.38	1.62
HUB	37.29	10.54	6.50	4.04	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	640.3427	304.0861	563.5339	1111.8352	0.5759	-0.1734	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8704	6.3029	521.4359	501.2099	0.3403	28.3515	31.5000	3.1485

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	543.7192	118.6087	530.6246	1121.6003	0.4848	0.1200	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8507	6.6982	530.6312	501.0890	451.3937	0.0247	0.3038

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	555.1722	0.0000	555.1722	1120.5092	0.4955	0.2116	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6346	529.6213	501.0552	0.0000	0.0600	0.0400	0.0728

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8776	7.8300	1.1828	554.3934	28.4141	245.2655	1.9013

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
176771.391	0.443	566.118	546468.938	0.943389E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.381 EfDer = 1.000 SH = 0.105161E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.671	3652.662	7.830	554.393	1.000	1.000	0.980

W Kg/sec = 25.760 Wdry = 56.665 WH2O = 0.006 lbm/sec H2O = 0.059g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
109.994	3533.122	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
96491.219	44465.188	1.594	513.330	322.005	395.845	1.229

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	451.13	-0.16	451.13	0.40	0.67	593.81
MEAN	16.97	0.00	-0.02	451.13	-0.16	451.13	0.40	0.62	
HUB	14.32	0.00	-0.02	451.13	-0.16	451.13	0.40	0.57	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.70	46.36	7.34	613.92	761.98	7.02	538.04	501.02	0.25
MEAN	50.18	43.80	6.38	540.95	704.49	7.02	538.04	501.02	0.25
HUB	45.35	37.84	7.51	456.46	641.88	7.02	538.04	501.02	0.25

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	532.03	279.46	452.72	1150.83	0.46	2.16	1.89	8.34
MEAN	16.57	542.91	289.18	459.49	1147.30	0.47	2.24	1.97	6.35
HUB	13.89	587.28	356.43	466.76	1143.97	0.51	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	601.81	555.75	322.35	0.48	5279.26	0.92	0.91		
MEAN	528.30	517.99	239.12	0.45	4795.42	0.92	0.91	0.91	1.48
HUB	442.75	474.67	86.32	0.41	4953.02	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.17	1.17	7.94	581.44	1.05	558.69	512.02	0.15
MEAN	9.04	1.15	7.77	578.96	1.04	555.27	511.07	0.16
HUB	9.09	1.16	7.61	579.77	1.05	552.05	511.41	0.18

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.69	35.45	31.50	3.95	0.93	0.40	1.40
MEAN	32.18	27.49	23.50	3.99	0.93	0.39	1.62
HUB	37.37	10.48	6.50	3.98	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	586.4301	290.8032	509.2483	1144.3118	0.5125	-0.1198	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.0869	7.6133	552.4241	511.4908	0.1782	29.7283	32.4000	2.6717

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	504.2575	113.0902	491.4125	1151.7444	0.4378	0.1458	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.0717	7.9659	559.6248	511.4151	432.2457	0.0214	0.3260

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	500.1288	0.0000	500.1288	1152.0640	0.4341	0.2370	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9625	559.9593	511.3685	0.0000	0.0600	0.0391	0.1433

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8791	9.0483	1.1556	580.0536	25.6624	247.6771	1.9200

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
159720.500	0.441	511.511	540106.438	0.115333E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.684 EfDer = 1.000 SH = 0.134651E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.671	3652.662	9.048	580.053	1.000	1.000	0.980

W Kg/sec = 25.760 Wdry = 56.664 WH2O = 0.008 lbm/sec H2O = 0.086g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
97.362	3454.089	1.381	0.249	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
85754.742	44464.672	1.788	509.668	285.045	384.739	1.350

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	403.81	-0.14	403.81	0.35	0.61	552.20
MEAN	15.91	0.00	-0.02	403.81	-0.14	403.81	0.35	0.56	
HUB	13.07	0.00	-0.02	403.81	-0.14	403.81	0.35	0.50	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.34	47.36	7.98	583.96	710.10	8.33	566.96	511.37	0.15
MEAN	51.48	44.80	6.68	507.23	648.46	8.33	566.96	511.37	0.15
HUB	45.90	38.84	7.06	416.61	580.30	8.33	566.96	511.37	0.15

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	494.99	279.30	408.67	1178.56	0.42	2.05	1.78	7.43
MEAN	15.50	499.30	277.10	415.36	1174.52	0.43	2.13	1.86	5.75
HUB	12.59	532.10	323.57	422.42	1170.63	0.45	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	571.85	502.58	292.55	0.43	5013.19	0.92	0.91		
MEAN	493.99	468.58	216.90	0.40	4296.57	0.92	0.91	0.91	1.52
HUB	401.31	429.52	77.75	0.37	4075.51	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.45	1.15	9.27	605.72	1.04	586.04	521.00	0.10
MEAN	10.24	1.13	9.06	602.05	1.04	582.03	519.67	0.11
HUB	10.18	1.12	8.85	600.92	1.04	578.18	519.28	0.12

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	34.35	35.60	31.50	4.10	0.93	0.43	1.40
MEAN	33.71	27.57	23.50	4.07	0.93	0.41	1.64
HUB	37.45	10.43	6.50	3.93	0.93	0.40	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	555.6964	282.1791	478.7206	1170.5028	0.4748	-0.1987	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.2635	8.8132	578.1007	519.9592	0.1250	30.5170	33.0000	2.4830

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   484.1031   110.5454   471.3126  1176.5394     0.4115     0.0560     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.2397     9.1270   584.0782   519.8771   410.5396     0.0394     0.3397

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   468.9889     0.0000   468.9889  1177.6793     0.3982     0.2622     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.1935   585.2355   519.8783     0.0000     0.0600     0.0387     0.1101

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8813    10.2405     1.1318   602.8963    22.8458   254.6653     1.9741

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 142264.172       0.435     455.607  548780.125   0.147792E-03

Melt Ratio at Stator LE, Throat, TE
0.33936E-01 0.41235E-01 0.61572E-01
 trTOT =     1.3171   Tt4 =   602.8963   T1  =   457.7354

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    903128.31   2892.3057    183.5028      2.4012      0.8621      4.8241      1.3171     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.849   EfDer =  0.984    SH =  0.116537E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     61.713    3973.534       4.265     477.917       1.000       1.000       0.980
  W Kg/sec =  28.051  Wdry =  61.706  WH2O = 0.007  lbm/sec   H2O =   0.040g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     204.190    4139.589       1.381       0.248      53.352      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 171740.531   48420.855       1.391     831.557     597.709     619.754       1.037

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   495.67    -0.17   495.67     0.48     0.84   745.23
 MEAN    17.06     0.00    -0.02   495.67    -0.17   495.67     0.48     0.74
 HUB     12.51     0.00    -0.02   495.67    -0.17   495.67     0.48     0.63

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.29     50.47     4.82   715.36   870.44      3.66   458.16   461.04     3.35
 MEAN    50.05     47.20     2.85   591.57   771.91      3.66   458.16   461.04     3.35
 HUB     41.20     38.62     2.58   433.79   658.80      3.66   458.16   461.04     3.35

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   743.49   360.80   650.07  1061.29      0.70     7.29     6.52    16.04
 MEAN    18.04   789.57   420.36   668.37  1055.79      0.75     7.43     6.80    12.53
 HUB     15.00   933.49   592.61   721.26  1041.48      0.90     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    715.36   740.48   354.55     0.70  7446.90      0.92     0.90
 MEAN   625.41   699.12   205.05     0.66  7584.54      0.92     0.90     0.90     1.21
 HUB    520.13   724.90    72.48     0.70  8891.31      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.60     1.31     4.05   519.45     1.09   475.00   484.00     1.86
 MEAN     5.63     1.32     3.90   520.22     1.09   470.08   484.59     2.23
 HUB      5.89     1.38     3.52   527.51     1.10   457.43   489.13     3.60

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.03    28.61    24.20     4.41     0.93     0.26     1.80
 MEAN    32.17    17.06    12.70     4.36     0.91     0.22     2.22
 HUB     39.41    -5.74    -9.30     3.56     0.91     0.06     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950      1.000       0.984       1.812     33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   853.9658   419.5438   743.8015  1048.6494     0.8143    -0.1081     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.6901     3.6966   463.7432   486.0110     2.8526    29.4253    35.4000     5.9747

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   695.7693   170.2064   674.6293  1070.7015     0.6498     0.2275     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.6290     4.2521   483.4619   485.0045   554.9116     0.0424     0.3582

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   698.0885     0.0000   698.0885  1070.3904     0.6522     0.2521     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.1991	483.2070	484.8703	0.0000	0.0600	0.0739	0.1994

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8219	5.5696	1.3060	522.3918	44.4759	238.1453	1.8461

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
276545.031	0.540	964.439	688540.938	0.131983E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.458 EfDer = 0.989 SH = 0.147921E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
61.713	3973.534	5.570	522.391	1.000	1.000	0.980

W Kg/sec = 28.051 Wdry = 61.704 WH2O = 0.009 lbm/sec H2O = 0.059g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
163.458	3959.469	1.381	0.248	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
150255.609	48420.258	1.234	590.487	478.496	468.502	0.979

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	610.70	-0.21	610.70	0.57	0.87	710.04
MEAN	18.08	0.00	-0.02	610.70	-0.21	610.70	0.57	0.81	
HUB	15.21	0.00	-0.02	610.70	-0.21	610.70	0.57	0.75	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.41	46.36	3.05	712.58	938.64	4.50	492.41	484.72	1.17
MEAN	45.76	42.30	3.46	626.87	875.33	4.50	492.41	484.72	1.17
HUB	40.83	37.84	2.99	527.42	807.06	4.50	492.41	484.72	1.17

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	661.90	280.53	599.51	1109.45	0.60	2.33	2.04	9.02
MEAN	18.01	682.13	306.64	609.33	1105.88	0.62	2.40	2.13	7.35
HUB	15.22	744.71	412.25	620.19	1102.68	0.68	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	708.08	736.35	427.54	0.66	5732.79	0.92	0.90		
MEAN	624.51	687.26	317.87	0.62	5526.30	0.92	0.90	0.90	1.37
HUB	527.87	630.87	115.61	0.57	6278.96	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.77	1.22	5.34	554.36	1.06	519.13	498.74	0.51
MEAN	6.72	1.21	5.22	553.20	1.06	515.79	498.31	0.57
HUB	6.89	1.24	5.10	557.40	1.07	512.81	500.15	0.62

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.08	35.49	31.50	3.99	0.93	0.32	1.40
MEAN	26.71	27.55	23.50	4.05	0.92	0.32	1.63
HUB	33.61	10.56	6.50	4.06	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.989	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	782.7081	307.4963	719.7763	1095.0103	0.7148	-0.2379	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7805	4.8421	505.7412	499.2523	0.7672	23.1327	30.6000	7.4673

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	676.7531	143.4765	661.3692	1108.3971	0.6106	0.0194	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7297	5.2478	518.1687	498.8494	491.5697	0.0421	0.2198

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	720.9962	0.0000	720.9962	1103.0468	0.6536	0.0960	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0282	513.2018	498.8109	0.0000	0.0600	0.0754	-0.1197

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8226	6.6772	1.1989	554.9855	32.5952	281.1149	2.1792

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
202775.203	0.404	707.170	623577.250	0.154206E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.833 EfDer = 0.991 SH = 0.164178E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
61.713	3973.534	6.677	554.985	1.000	1.000	0.980

W Kg/sec = 28.051 Wdry = 61.703 WH2O = 0.010 lbm/sec H2O = 0.075g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
140.533	3841.442	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
129348.734	48419.949	1.326	545.479	411.411	424.468	1.032

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	569.11	-0.20	569.11	0.51	0.80	672.78
MEAN	17.74	0.00	-0.02	569.11	-0.20	569.11	0.51	0.75	
HUB	15.05	0.00	-0.02	569.11	-0.20	569.11	0.51	0.69	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.73	46.36	4.37	695.94	899.16	5.61	528.96	498.58	0.42
MEAN	47.23	43.40	3.83	615.09	838.13	5.61	528.96	498.58	0.42
HUB	42.53	38.84	3.69	521.87	772.29	5.61	528.96	498.58	0.42

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	631.66	283.69	564.37	1146.30	0.55	2.26	1.98	8.75
MEAN	17.51	649.95	307.48	572.62	1142.98	0.57	2.34	2.07	6.78
HUB	14.85	709.14	405.52	581.75	1139.96	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	686.92	693.62	403.23	0.61	5623.85	0.92	0.91		
MEAN	607.05	646.25	299.57	0.57	5386.42	0.92	0.91	0.91	1.40
HUB	514.93	591.95	109.41	0.52	6024.96	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.00	1.20	6.53	586.33	1.06	554.26	510.74	0.22
MEAN	7.94	1.19	6.40	585.01	1.05	551.06	510.28	0.24
HUB	8.10	1.21	6.26	588.56	1.06	548.15	511.65	0.25

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.69	35.55	31.50	4.05	0.93	0.34	1.40
MEAN	28.23	27.62	23.50	4.12	0.92	0.34	1.62
HUB	34.88	10.65	6.50	4.15	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.991	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	733.4656	309.4991	664.9678	1134.9642	0.6462	-0.2059	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0005	6.0620	543.4089	510.9514	0.2877	24.9589	31.5000	6.5411

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	641.4871	139.9361	626.0380	1145.5382	0.5600	0.0338	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.9596	6.4499	553.5674	510.7216	451.3937	0.0352	0.2531

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	659.1487	0.0000	659.1487	1143.5997	0.5764	0.1431	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.3394	551.7258	510.6434	0.0000	0.0600	0.0606	-0.0343

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8444	7.9185	1.1859	586.6313	31.6479	266.5661	2.0664

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
196973.625	0.417	686.937	589370.563	0.172927E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 4.422 EfDer = 0.995 SH = 0.188695E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
61.713	3973.534	7.918	586.631	1.000	1.000	0.980

W Kg/sec = 28.051 Wdry = 61.701 WH2O = 0.012 lbm/sec H2O = 0.100g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
121.836	3736.392	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
112483.953	48419.484	1.439	513.330	356.704	395.845	1.110

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	525.90	-0.18	525.90	0.45	0.74	627.98
MEAN	16.97	0.00	-0.02	525.90	-0.18	525.90	0.45	0.68	
HUB	14.32	0.00	-0.02	525.90	-0.18	525.90	0.45	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.79	46.36	5.43	667.85	850.20	6.88	564.42	510.55	0.19
MEAN	48.22	43.80	4.42	588.47	789.36	6.88	564.42	510.55	0.19
HUB	43.37	37.84	5.53	496.56	723.41	6.88	564.42	510.55	0.19

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	594.60	279.95	524.57	1180.25	0.50	2.16	1.89	8.34
MEAN	16.57	609.34	296.62	532.27	1176.74	0.52	2.24	1.97	6.35
HUB	13.89	661.27	380.77	540.64	1173.49	0.56	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	654.68	644.67	374.73	0.55	5288.90	0.92	0.91		
MEAN	574.71	600.54	278.09	0.51	4919.26	0.92	0.91	0.91	1.42
HUB	481.64	549.97	100.87	0.47	5291.49	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.31	1.18	7.85	616.09	1.05	587.69	520.96	0.12
MEAN	9.21	1.16	7.69	614.03	1.05	584.21	520.27	0.13
HUB	9.31	1.18	7.53	616.11	1.05	580.98	521.02	0.13

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	28.09	35.54	31.50	4.04	0.93	0.36	1.40
MEAN	29.13	27.59	23.50	4.09	0.92	0.35	1.62
HUB	35.16	10.57	6.50	4.07	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	664.2007	298.2906	593.4521	1172.4172	0.5665	-0.1371	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.2617	7.4696	579.9852	520.7540	0.1381	26.6858	32.4000	5.7142

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   588.3720   131.9546   573.3843  1180.1038     0.4986     0.0751     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.2316     7.8066   587.6111   520.6212   432.2457     0.0289     0.2831

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   583.6974     0.0000   583.6974  1180.5160     0.4944     0.1859     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.8027   588.0540   520.5522     0.0000     0.0600     0.0476     0.0726

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8618     9.2019     1.1621   615.4078    28.7789   266.8243     2.0684

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 179225.469       0.418     625.041  577108.375   0.201860E-03

Melt Ratio at Stator LE, Throat, TE
0.13877E-02 0.76840E-02 0.23798E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.029   EfDer =  0.997    SH =  0.221533E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     61.713    3973.534       9.202     615.407       1.000       1.000       0.980
 W Kg/sec =  28.051  Wdry =  61.699  WH2O = 0.014  lbm/sec   H2O =   0.133g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    107.384    3647.990       1.380       0.249      53.355      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  98952.352   48418.863       1.621     509.668     314.423     384.739       1.224

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   465.96    -0.16   465.96     0.39     0.66   583.19
 MEAN   15.91     0.00    -0.02   465.96    -0.16   465.96     0.39     0.61
 HUB    13.07     0.00    -0.02   465.96    -0.16   465.96     0.39     0.55

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    53.75    47.36     6.39   635.26   787.96     8.29   597.98   520.51     0.11
 MEAN   49.83    44.80     5.03   551.79   722.34     8.29   597.98   520.51     0.11
 HUB    44.22    38.84     5.38   453.21   650.13     8.29   597.98   520.51     0.11

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   548.87   285.62   468.70  1211.88      0.45     2.05     1.78     7.43
 MEAN   15.50   556.80   287.65   476.74  1207.55      0.46     2.13     1.86     5.75
 HUB    12.59   596.34   346.63   485.25  1203.44      0.50     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   622.08   576.96   336.46     0.48  5126.97      0.92     0.91
 MEAN  537.39   538.19   249.74     0.45  4460.49      0.92     0.91     0.91     1.47
 HUB   436.57   493.51    89.94     0.41  4366.17      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.69     1.16     9.31   643.94     1.05   619.76   529.91     0.07
 MEAN   10.49     1.14     9.09   640.23     1.04   615.35   528.73     0.08
 HUB    10.46     1.14     8.87   639.71     1.04   611.17   528.59     0.08

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    31.36    35.67    31.50     4.17     0.93     0.40     1.40
 MEAN   31.11    27.65    23.50     4.15     0.92     0.38     1.64
 HUB    35.54    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   625.6859   292.9281   552.8797  1202.1107     0.5205    -0.2177     2.0437
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     Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
    10.5206     8.7673    609.8831    529.0524     0.0863    27.9156    33.0000     5.0844

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG        Cth         Cuth        Cmth       Aoth          Machth     cp 2-Th     Stat Chord
    15.2185    560.3842    127.9642    545.5782   1208.2257     0.4638     -0.0201     2.1315

    BlockageTh  PtTh       PsTh       TsTh       TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     10.4758     9.0572    616.0964    528.9111   410.5396     0.0506     0.3039

     VANED DIFFUSER EXIT:
    R4         C4          Cu4        Cm4        Ao4           Mach4      cp 3-4   Stator Gap
    14.7013    541.4936     0.0000    541.4936   1209.8311     0.4476     0.2202     0.5109

    Blockage4   Ps4       Ts4        TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.1534    617.7679   528.9226     0.0000     0.0600     0.0454     0.0457

     STAGE EXIT CONDITIONS, STAGE             5
     Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
     0.8694     10.4835      1.1393    641.2928    25.8895   270.7858     2.0991

Del Enthalpy   Del_H/U^2    GHP       Reynolds#        SH
 161345.141       0.417     562.684   580983.000   0.233373E-03

Melt Ratio at Stator LE, Throat, TE
0.86851E-01 0.96352E-01 0.12316E+00
 trTOT =     1.3418   Tt4 =    641.2928   T1  =   477.9170

    OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP         MassFloS1cor   OPR         Efficiency  Rotor1Inc    TR       AxHubLen
    1016864.50   3546.2717    204.1905      2.4583      0.8236      2.8490      1.3418     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 84.0%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 3.960   EfDer =  0.992    SH =  0.119570E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     58.014    3823.140       4.265     477.917       1.000       1.000       0.980
  W Kg/sec =  26.370  Wdry =  58.007  WH2O = 0.007  lbm/sec   H2O =   0.042g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     191.950    3982.910       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 158834.750   45518.203       1.480     831.557     561.882     619.754       1.103

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1       CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   458.42    -0.16   458.42      0.44     0.79   717.02
 MEAN    17.06     0.00    -0.02   458.42    -0.16   458.42      0.44     0.70
 HUB     12.51     0.00    -0.02   458.42    -0.16   458.42      0.44     0.59

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.34    50.47     5.87   688.28   827.10      3.74   461.02   460.98     3.08
 MEAN    51.16    47.20     3.96   569.18   730.96      3.74   461.02   460.98     3.08
 HUB     42.33    38.62     3.71   417.37   620.07      3.74   461.02   460.98     3.08

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   698.17   363.19   596.27  1065.68      0.66     7.29     6.52    16.04
 MEAN    18.04   739.23   413.89   612.50  1060.22      0.70     7.43     6.80    12.53
 HUB     15.00   862.55   565.36   651.43  1048.48      0.82     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    688.28   679.13   325.10     0.64  7495.79      0.92     0.91
 MEAN   601.74   640.66   187.85     0.60  7467.60      0.92     0.91     0.91     1.26
 HUB    500.45   654.65    64.91     0.62  8482.35      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.57     1.31     4.19   518.14     1.08   478.94   483.26     1.68
 MEAN     5.56     1.30     4.03   517.99     1.08   474.04   483.36     2.00
 HUB      5.76     1.35     3.71   523.43     1.10   463.60   486.67     2.94

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.35    28.60    24.20     4.40     0.93     0.30     1.80
 MEAN    34.05    17.05    12.70     4.35     0.92     0.25     2.22
 HUB     40.95    -5.69    -9.30     3.61     0.92     0.11     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.992       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   790.3317   413.0850   673.7841  1055.2651     0.7489    -0.0908     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.6132     3.8847   469.6227   484.4772     2.3785    31.5117    35.4000     3.8883

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   635.2681   155.4060   615.9664  1075.0448     0.5909     0.2640     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5744     4.4136   487.4014   483.7665   554.9116     0.0335     0.3862

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   632.8136     0.0000   632.8136  1075.2975     0.5885     0.2950     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.3947   487.6553   483.6878     0.0000     0.0600     0.0542     0.2525
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8536     5.5401     1.2991   519.8531    41.9379   230.2712     1.7850

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 260780.688       0.550     854.944  636799.438   0.137421E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 4.808   EfDer =  0.996    SH =  0.156221E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     58.014    3823.140       5.540     519.853       1.000       1.000       0.980
 W Kg/sec =  26.370  Wdry =  58.005  WH2O = 0.009  lbm/sec   H2O =   0.063g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    154.102    3818.898       1.381       0.248      53.353      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 137903.844   45517.543       1.309     590.487     451.112     468.502       1.039

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   560.50    -0.19   560.50     0.52     0.82   684.83
 MEAN    18.08     0.00    -0.02   560.50    -0.19   560.50     0.52     0.76
 HUB     15.21     0.00    -0.02   560.50    -0.19   560.50     0.52     0.70

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     50.74    46.36     4.38   685.61   885.72     4.63   494.60   483.62     1.17
 MEAN    47.11    42.30     4.81   603.15   823.52     4.63   494.60   483.62     1.17
 HUB     42.17    37.84     4.33   507.45   756.22     4.63   494.60   483.62     1.17

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   623.39   287.95   552.90  1110.56      0.56     2.33     2.04     9.02
 MEAN    18.01   641.46   308.34   562.50  1106.71      0.58     2.40     2.13     7.35
 HUB     15.22   699.79   401.88   572.88  1103.21      0.63     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    681.28   678.53   393.32     0.61  5883.98      0.92     0.91
 MEAN   600.87   634.02   292.53     0.57  5556.60      0.92     0.91     0.91     1.40
 HUB    507.89   582.60   106.00     0.53  6120.82      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.73     1.22     5.45   551.42     1.06   520.17   497.72     0.54
 MEAN     6.66     1.20     5.32   549.66     1.06   516.58   497.02     0.59
 HUB      6.79     1.22     5.19   552.69     1.06   513.32   498.39     0.65

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     27.51    35.43    31.50     3.93     0.93     0.35     1.40
 MEAN    28.73    27.48    23.50     3.98     0.92     0.34     1.63
 HUB     35.05    10.48     6.50     3.98     0.92     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.996       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   724.9170   309.2012   655.6671  1098.5433     0.6599    -0.2077     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7137     5.0293   509.0143   497.8330     0.7466    25.2477    30.6000     5.3523

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   617.7047   130.9578   603.6631  1110.9661     0.5560     0.0771     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6818     5.4300   520.5830   497.5248   491.5697     0.0327     0.2557

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   650.4768     0.0000   650.4768  1107.3741     0.5874     0.1492     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.2805	517.2456	497.5089	0.0000	0.0600	0.0545	-0.0292

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8564	6.6512	1.2005	551.2532	31.4017	266.4631	2.0656

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
195358.328	0.421	640.463	574143.688	0.163708E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.120 EfDer = 0.997 SH = 0.175352E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.014	3823.140	6.651	551.253	1.000	1.000	0.980

W Kg/sec = 26.370 Wdry = 58.003 WH2O = 0.010 lbm/sec H2O = 0.082g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
132.180	3708.538	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
118956.781	45517.203	1.410	545.479	386.961	424.468	1.097

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	523.39	-0.18	523.39	0.47	0.76	649.51
MEAN	17.74	0.00	-0.02	523.39	-0.18	523.39	0.47	0.71	
HUB	15.05	0.00	-0.02	523.39	-0.18	523.39	0.47	0.65	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.99	46.36	5.63	669.60	850.02	5.74	529.24	497.36	0.45
MEAN	48.52	43.40	5.12	591.81	790.18	5.74	529.24	497.36	0.45
HUB	43.82	38.84	4.98	502.12	725.42	5.74	529.24	497.36	0.45

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	596.07	289.47	521.07	1145.47	0.52	2.26	1.98	8.75
MEAN	17.51	612.22	308.07	529.06	1141.95	0.54	2.34	2.07	6.78
HUB	14.85	667.22	395.00	537.73	1138.70	0.59	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	660.92	639.92	371.46	0.56	5737.93	0.92	0.91		
MEAN	584.07	596.72	276.00	0.52	5396.48	0.92	0.91	0.91	1.43
HUB	495.44	547.03	100.45	0.48	5868.42	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.96	1.20	6.64	582.02	1.06	553.47	509.54	0.24
MEAN	7.88	1.18	6.50	580.19	1.05	550.07	508.87	0.27
HUB	8.00	1.20	6.35	582.72	1.06	546.94	509.88	0.29

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	29.05	35.48	31.50	3.98	0.93	0.37	1.40
MEAN	30.21	27.55	23.50	4.05	0.92	0.36	1.62
HUB	36.30	10.58	6.50	4.08	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.997	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	683.6570	310.0939	609.2855	1135.6757	0.6020	-0.1851	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9319	6.2273	544.0918	509.4756	0.3098	26.9737	31.5000	4.5263

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	587.7576	128.2153	573.6025	1145.8610	0.5129	0.0867	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.9056	6.6214	553.8865	509.2912	451.3937	0.0281	0.2839

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	601.0734	0.0000	601.0734	1144.5172	0.5252	0.1869	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.5458	552.6179	509.2496	0.0000	0.0600	0.0453	0.0346

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8688	7.8807	1.1849	581.6418	30.3907	253.5447	1.9655

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
189154.891	0.433	620.126	546281.188	0.185713E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 5.600 EfDer = 0.999 SH = 0.203865E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.014	3823.140	7.881	581.641	1.000	1.000	0.980

W Kg/sec = 26.370 Wdry = 58.002 WH2O = 0.012 lbm/sec H2O = 0.110g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
114.591	3610.360	1.381	0.249	53.355	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
103828.258	45516.695	1.530	513.330	335.494	395.845	1.180

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	485.43	-0.17	485.43	0.42	0.70	606.79
MEAN	16.97	0.00	-0.02	485.43	-0.17	485.43	0.42	0.65	
HUB	14.32	0.00	-0.02	485.43	-0.17	485.43	0.42	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.94	46.36	6.58	642.58	805.46	6.99	562.71	509.19	0.22
MEAN	49.40	43.80	5.60	566.20	745.93	6.99	562.71	509.19	0.22
HUB	44.55	37.84	6.71	477.76	681.22	6.99	562.71	509.19	0.22

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	562.58	283.45	485.95	1177.46	0.48	2.16	1.89	8.34
MEAN	16.57	575.16	295.90	493.20	1173.88	0.49	2.24	1.97	6.35
HUB	13.89	623.08	370.44	501.00	1170.52	0.53	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	629.90	596.81	346.45	0.51	5354.76	0.92	0.91		
MEAN	552.96	556.17	257.05	0.47	4907.12	0.92	0.91	0.91	1.45
HUB	463.41	509.55	92.98	0.44	5147.77	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.25	1.17	7.93	610.34	1.05	584.92	519.54	0.14
MEAN	9.13	1.16	7.76	607.94	1.05	581.37	518.72	0.15
HUB	9.19	1.17	7.60	609.23	1.05	578.05	519.21	0.16

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.25	35.49	31.50	3.99	0.93	0.38	1.40
MEAN	30.96	27.53	23.50	4.03	0.92	0.38	1.62
HUB	36.48	10.51	6.50	4.01	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	623.3550	297.5684	547.7450	1170.3816	0.5326	-0.1262	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1743	7.5814	577.9681	519.1614	0.1606	28.5135	32.4000	3.8865

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	542.5479	121.6776	528.7275	1178.0161	0.4606	0.1185	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.1546	7.9304	585.5327	519.0511	432.2457	0.0238	0.3088

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	538.1417	0.0000	538.1417	1178.3710	0.4567	0.2170	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9270	585.9172	518.9932	0.0000	0.0600	0.0418	0.1161

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8740	9.1290	1.1584	609.1672	27.5280	255.0070	1.9768

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
171437.109	0.432	562.040	538096.313	0.218420E-03

Melt Ratio at Stator LE, Throat, TE
0.86114E-02 0.15252E-01 0.32152E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.022 EfDer = 0.999 SH = 0.238677E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.014	3823.140	9.129	609.167	1.000	1.000	0.980

W Kg/sec = 26.370 Wdry = 58.000 WH2O = 0.014 lbm/sec H2O = 0.145g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
101.236	3527.850	1.380	0.249	53.356	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
91905.844	45516.070	1.719	509.668	296.422	384.739	1.298

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	432.78	-0.15	432.78	0.36	0.63	563.99
MEAN	15.91	0.00	-0.02	432.78	-0.15	432.78	0.36	0.58	
HUB	13.07	0.00	-0.02	432.78	-0.15	432.78	0.36	0.52	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.71	47.36	7.35	611.21	749.04	8.34	594.13	518.96	0.13
MEAN	50.82	44.80	6.02	530.91	685.07	8.34	594.13	518.96	0.13
HUB	45.23	38.84	6.39	436.06	614.47	8.34	594.13	518.96	0.13

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	521.90	285.42	436.94	1206.96	0.43	2.05	1.78	7.43
MEAN	15.50	527.68	284.78	444.24	1202.76	0.44	2.13	1.86	5.75
HUB	12.59	563.52	336.61	451.94	1198.73	0.47	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	598.54	537.55	313.12	0.45	5123.13	0.92	0.91		
MEAN	517.05	501.29	232.27	0.42	4415.81	0.92	0.91	0.91	1.50
HUB	420.04	459.57	83.43	0.38	4239.88	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.57	1.16	9.31	636.60	1.05	614.74	528.20	0.09
MEAN	10.36	1.13	9.09	632.82	1.04	610.47	526.97	0.09
HUB	10.31	1.13	8.88	631.87	1.04	606.38	526.68	0.10

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.15	35.63	31.50	4.13	0.93	0.42	1.40
MEAN	32.66	27.60	23.50	4.10	0.93	0.39	1.64
HUB	36.68	10.46	6.50	3.96	0.93	0.39	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	589.4113	290.0040	513.1310	1198.1820	0.4919	-0.2058	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3868	8.8221	605.8865	527.2597	0.1033	29.4736	33.0000	3.5264

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     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    15.2185   519.2570   118.5728   505.5376  1204.3391     0.4312     0.0268     2.1315

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500    10.3564     9.1295   612.1267   527.1479   410.5396     0.0431     0.3253

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
    14.7013   502.6116     0.0000   502.6116  1205.6499     0.4169     0.2456     0.5109

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.2063   613.4922   527.1500     0.0000     0.0600     0.0409     0.0850

     STAGE EXIT CONDITIONS, STAGE            5
     Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
     0.8778    10.3593     1.1348   633.7604    24.5977   260.9218     2.0226

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 153289.406       0.428     502.544  544921.125   0.251139E-03

Melt Ratio at Stator LE, Throat, TE
0.95410E-01 0.10519E+00 0.13224E+00
 trTOT =     1.3261   Tt4 =   633.7604   T1  =   477.9165

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    970020.38   3180.1160    191.9502      2.4291      0.8504      3.9596      1.3261     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 79.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.390   EfDer =  0.994    SH =  0.120686E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     56.717    3776.068       4.265     477.916       1.000       1.000       0.980
 W Kg/sec =  25.781  Wdry =  56.710  WH2O = 0.007  lbm/sec   H2O =   0.043g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     187.661    3933.871       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 154481.719   44501.090       1.514     831.557     549.327     619.754       1.128

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   445.86    -0.15   445.86     0.43     0.78   708.20
 MEAN    17.06     0.00    -0.02   445.86    -0.15   445.86     0.43     0.69
 HUB     12.51     0.00    -0.02   445.86    -0.15   445.86     0.43     0.58

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.75    50.47     6.28   679.81   813.10      3.77   461.93   460.96     3.00
 MEAN    51.59    47.20     4.39   562.17   717.63      3.77   461.93   460.96     3.00
 HUB     42.77    38.62     4.15   412.23   607.33      3.77   461.93   460.96     3.00

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   683.76   364.46   578.53  1067.07      0.64     7.29     6.52    16.04
 MEAN    18.04   723.12   412.16   594.16  1061.60      0.68     7.43     6.80    12.53
 HUB     15.00   840.62   556.92   629.67  1050.48      0.80     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    679.81   658.89   315.34     0.62  7522.07      0.92     0.91
 MEAN   594.33   621.46   182.18     0.59  7436.27      0.92     0.91     0.91     1.28
 HUB    494.29   632.78    62.63     0.60  8355.67      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.56     1.30     4.23   517.78     1.08   480.18   483.06     1.63
 MEAN     5.54     1.30     4.08   517.33     1.08   475.28   482.99     1.94
 HUB      5.72     1.34     3.77   522.20     1.09   465.37   485.96     2.79

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.21    28.59    24.20     4.39     0.93     0.31     1.80
 MEAN    34.75    17.05    12.70     4.35     0.92     0.27     2.22
 HUB     41.49    -5.68    -9.30     3.62     0.92     0.12     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   770.6697   411.3551   651.7045  1057.1921     0.7290    -0.0860     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.5903     3.9410   471.3422   484.0397     2.2636    32.2601    35.4000     3.1399

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   615.7686   150.6358   597.0593  1076.3781     0.5721     0.2769     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5568     4.4627   488.6139   483.3971   554.9116     0.0312     0.3960

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   612.5488     0.0000   612.5488  1076.7051     0.5689     0.3088     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4503   488.9352   483.3332     0.0000     0.0600     0.0493     0.2691
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8618     5.5282     1.2963   519.1034    41.1884   227.3489     1.7624

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 256124.719       0.554     820.917  619347.063   0.139505E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.292   EfDer =  0.998    SH =  0.159430E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     56.717    3776.068       5.528     519.103       1.000       1.000       0.980
 W Kg/sec =  25.781  Wdry =  56.708  WH2O = 0.009  lbm/sec   H2O =   0.065g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    150.874    3774.601       1.381       0.248      53.353      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 133918.234   44500.414       1.337     590.487     441.663     468.502       1.061

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   544.30    -0.19   544.30     0.50     0.80   676.89
 MEAN    18.08     0.00    -0.02   544.30    -0.19   544.30     0.50     0.74
 HUB     15.21     0.00    -0.02   544.30    -0.19   544.30     0.50     0.68

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.22     46.36     4.86   677.17   868.95     4.66   495.29   483.28     1.17
 MEAN    47.59     42.30     5.29   595.72   807.08     4.66   495.29   483.28     1.17
 HUB     42.65     37.84     4.81   501.21   740.04     4.66   495.29   483.28     1.17

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   611.26   290.67   537.73  1110.94      0.55     2.33     2.04     9.02
 MEAN    18.01   628.52   309.16   547.22  1107.01      0.57     2.40     2.13     7.35
 HUB     15.22   685.36   398.72   557.43  1103.42      0.62     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    672.89   659.73   382.22     0.59  5939.28      0.92     0.91
 MEAN   593.47   616.67   284.31     0.56  5571.41      0.92     0.91     0.91     1.41
 HUB    501.63   566.85   102.91     0.51  6072.64      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.72     1.22     5.48   550.57     1.06   520.53   497.41     0.54
 MEAN     6.64     1.20     5.35   548.62     1.06   516.86   496.63     0.61
 HUB      6.75     1.22     5.22   551.28     1.06   513.52   497.85     0.67

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.39    35.41    31.50     3.91     0.93     0.36     1.40
 MEAN    29.47    27.45    23.50     3.95     0.92     0.35     1.63
 HUB     35.58    10.46     6.50     3.96     0.92     0.37     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   707.1891   310.0313   635.6077  1099.5590     0.6432    -0.1991     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6896     5.0815   509.9574   497.4034     0.7442    26.0018    30.6000     4.5982

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   599.1392   127.0218   585.5196  1111.7294     0.5389     0.0960     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6623     5.4808   521.3014   497.1177   491.5697     0.0302     0.2674

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   629.2781     0.0000   629.2781  1108.5298     0.5677     0.1655     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3476	518.3284	497.1081	0.0000	0.0600	0.0491	-0.0025

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8646	6.6367	1.2005	550.1549	31.0532	261.5280	2.0273

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
193193.406	0.427	619.213	557756.188	0.167371E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.568 EfDer = 0.999 SH = 0.179692E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.717	3776.068	6.637	550.155	1.000	1.000	0.980

W Kg/sec = 25.781 Wdry = 56.707 WH2O = 0.010 lbm/sec H2O = 0.085g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
129.379	3666.532	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
115650.672	44500.059	1.440	545.479	378.762	424.468	1.121

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	508.84	-0.18	508.84	0.45	0.75	642.15
MEAN	17.74	0.00	-0.02	508.84	-0.18	508.84	0.45	0.69	
HUB	15.05	0.00	-0.02	508.84	-0.18	508.84	0.45	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.43	46.36	6.07	661.35	834.59	5.77	529.35	496.98	0.46
MEAN	48.97	43.40	5.57	584.53	775.11	5.77	529.35	496.98	0.46
HUB	44.27	38.84	5.43	495.93	710.66	5.77	529.35	496.98	0.46

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	585.02	291.44	507.26	1145.24	0.51	2.26	1.98	8.75
MEAN	17.51	600.38	308.39	515.13	1141.66	0.53	2.34	2.07	6.78
HUB	14.85	653.96	391.75	523.64	1138.35	0.57	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	652.79	622.80	361.35	0.54	5776.91	0.92	0.91		
MEAN	576.88	580.90	268.50	0.51	5401.90	0.92	0.91	0.91	1.44
HUB	489.34	532.65	97.59	0.47	5820.17	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.94	1.20	6.66	580.75	1.06	553.25	509.16	0.25
MEAN	7.85	1.18	6.52	578.76	1.05	549.80	508.43	0.28
HUB	7.95	1.20	6.38	580.98	1.06	546.61	509.33	0.30

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	29.88	35.46	31.50	3.96	0.93	0.38	1.40
MEAN	30.91	27.53	23.50	4.03	0.92	0.37	1.62
HUB	36.80	10.56	6.50	4.06	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	668.3433	310.4101	591.8854	1135.8672	0.5884	-0.1790	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9023	6.2693	544.2759	509.0096	0.3182	27.6744	31.5000	3.8256

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	571.0107	124.5621	557.2590	1145.9414	0.4983	0.1039	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8796	6.6643	553.9664	508.8360	451.3937	0.0262	0.2942

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	583.3409	0.0000	583.3409	1144.7305	0.5096	0.2004	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.5966	552.8258	508.8021	0.0000	0.0600	0.0416	0.0554

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8744	7.8581	1.1840	580.1620	30.0092	249.2668	1.9323

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
186782.625	0.438	598.666	531787.750	0.190686E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.003 EfDer = 0.999 SH = 0.209739E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.717	3776.068	7.858	580.162	1.000	1.000	0.980

W Kg/sec = 25.781 Wdry = 56.705 WH2O = 0.012 lbm/sec H2O = 0.113g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
112.210	3570.453	1.381	0.249	53.355	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
101099.172	44499.539	1.563	513.330	328.523	395.845	1.205

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	472.67	-0.16	472.67	0.41	0.69	600.09
MEAN	16.97	0.00	-0.02	472.67	-0.16	472.67	0.41	0.63	
HUB	14.32	0.00	-0.02	472.67	-0.16	472.67	0.41	0.58	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.33	46.36	6.97	634.66	791.47	7.01	562.22	508.75	0.23
MEAN	49.80	43.80	6.00	559.23	732.35	7.01	562.22	508.75	0.23
HUB	44.96	37.84	7.12	471.88	668.01	7.01	562.22	508.75	0.23

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	552.67	284.60	473.76	1176.62	0.47	2.16	1.89	8.34
MEAN	16.57	564.50	295.73	480.84	1173.03	0.48	2.24	1.97	6.35
HUB	13.89	611.09	367.22	488.45	1169.64	0.52	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	622.14	581.70	337.54	0.49	5376.41	0.92	0.91		
MEAN	546.15	542.14	250.42	0.46	4904.10	0.92	0.91	0.91	1.47
HUB	457.71	496.76	90.49	0.42	5103.07	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.21	1.17	7.94	608.62	1.05	584.09	519.08	0.14
MEAN	9.09	1.16	7.77	606.12	1.04	580.53	518.22	0.16
HUB	9.14	1.16	7.61	607.17	1.05	577.18	518.63	0.17

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.99	35.47	31.50	3.97	0.93	0.39	1.40
MEAN	31.59	27.51	23.50	4.01	0.93	0.38	1.62
HUB	36.94	10.50	6.50	4.00	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	610.7258	297.3896	533.4280	1169.7618	0.5221	-0.1228	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1337	7.6028	577.3548	518.6436	0.1686	29.1399	32.4000	3.2601

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	528.2614	118.4736	514.8049	1177.3761	0.4487	0.1327	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1165     7.9543   584.8963   518.5382   432.2457     0.0225     0.3177

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   523.9495     0.0000   523.9495  1177.7130     0.4449     0.2274     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.9510   585.2625   518.4833     0.0000     0.0600     0.0402     0.1303

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8769     9.0921     1.1570   607.3021    27.1426   251.1751     1.9471

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 169038.766       0.437     541.794  524770.563   0.224778E-03

Melt Ratio at Stator LE, Throat, TE
0.10869E-01 0.17618E-01 0.34763E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.364   EfDer =  1.000    SH =  0.245324E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     56.717    3776.068       9.092     607.301       1.000       1.000       0.980
 W Kg/sec =  25.781  Wdry =  56.703  WH2O = 0.014  lbm/sec   H2O =   0.149g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     99.224    3489.760       1.380       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  89672.094   44498.910       1.754     509.668     290.530     384.739       1.324

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   422.26    -0.15   422.26     0.36     0.62   557.90
 MEAN    15.91     0.00    -0.02   422.26    -0.15   422.26     0.36     0.57
 HUB     13.07     0.00    -0.02   422.26    -0.15   422.26     0.36     0.51

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.03    47.36     7.67   603.69   736.83     8.34   592.99   518.46     0.14
 MEAN    51.16    44.80     6.36   524.37   673.37     8.34   592.99   518.46     0.14
 HUB     45.58    38.84     6.74   430.69   603.26     8.34   592.99   518.46     0.14

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   513.49   285.45   426.83  1205.49     0.43     2.05     1.78     7.43
 MEAN    15.50   518.56   283.98   433.89  1201.33     0.43     2.13     1.86     5.75
 HUB     12.59   553.20   333.54   441.34  1197.33     0.46     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    591.17   525.02   305.71     0.44  5123.67     0.92     0.91
 MEAN   510.68   489.55   226.70     0.41  4403.32     0.92     0.91     0.91     1.51
 HUB    414.87   448.77    81.33     0.37  4201.16     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.51     1.16     9.29   634.40     1.04   613.24   527.63     0.09
 MEAN    10.30     1.13     9.08   630.59     1.04   609.01   526.39     0.10
 HUB     10.25     1.13     8.87   629.52     1.04   604.96   526.06     0.11

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.77    35.61    31.50     4.11     0.93     0.42     1.40
 MEAN    33.20    27.59    23.50     4.09     0.93     0.40     1.64
 HUB     37.08    10.44     6.50     3.94     0.93     0.39     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   578.1240   289.1872   500.5977  1196.9994     0.4830    -0.2021     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.3287     8.8234   604.6865   526.6730     0.1095    30.0143    33.0000     2.9857
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     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    15.2185   506.3702   115.6301   492.9914  1203.1648     0.4209     0.0421     2.1315

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500    10.3019     9.1348   610.9299   526.5682   410.5396     0.0410     0.3328

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
    14.7013   490.3647     0.0000   490.3647  1204.3934     0.4071     0.2543     0.5109

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.2061   612.2105   526.5680     0.0000     0.0600     0.0397     0.0982

     STAGE EXIT CONDITIONS, STAGE            5
     Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
     0.8798    10.3037     1.1333   631.5030    24.2054   257.6471     1.9973

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 150843.969       0.432     483.477  532360.563   0.258052E-03

Melt Ratio at Stator LE, Throat, TE
0.98128E-01 0.10800E+00 0.13515E+00
 trTOT =     1.3214   Tt4 =   631.5030   T1  =   477.9164

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    955983.50   3064.0667    187.6611      2.4161      0.8570      4.3898      1.3214     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 76.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.722   EfDer =  0.996    SH =  0.121507E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     55.773    3744.245       4.265     477.916       1.000       1.000       0.980
 W Kg/sec =  25.352  Wdry =  55.767  WH2O = 0.007  lbm/sec   H2O =   0.043g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     184.538    3900.718       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 151361.219   43760.555       1.539     831.557     540.187     619.754       1.147

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   436.85    -0.15   436.85     0.42     0.77   702.23
 MEAN    17.06     0.00    -0.02   436.85    -0.15   436.85     0.42     0.68
 HUB     12.51     0.00    -0.02   436.85    -0.15   436.85     0.42     0.57

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.06    50.47     6.59   674.08   803.38     3.79   462.57   460.95     2.94
 MEAN    51.92    47.20     4.72   557.44   708.34     3.79   462.57   460.95     2.94
 HUB     43.11    38.62     4.49   408.76   598.37     3.79   462.57   460.95     2.94

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   673.75   365.69   565.86  1068.05      0.63     7.29     6.52    16.04
 MEAN    18.04   711.88   411.19   581.11  1062.57      0.67     7.43     6.80    12.53
 HUB     15.00   825.46   551.21   614.46  1051.84      0.78     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    674.08   644.44   308.39     0.60  7547.33      0.92     0.91
 MEAN   589.32   607.80   178.13     0.57  7418.89      0.92     0.91     0.91     1.29
 HUB    490.12   617.49    61.09     0.59  8270.00      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.55     1.30     4.26   517.58     1.08   481.07   482.95     1.59
 MEAN     5.53     1.30     4.11   516.90     1.08   476.15   482.76     1.90
 HUB      5.69     1.33     3.81   521.38     1.09   466.58   485.49     2.69

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.87    28.59    24.20     4.39     0.93     0.32     1.80
 MEAN    35.28    17.04    12.70     4.34     0.92     0.28     2.22
 HUB     41.89    -5.68    -9.30     3.62     0.92     0.13     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.996       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   757.0659   410.3964   636.1788  1058.5216     0.7152    -0.0826     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.5756     3.9800   472.5304   483.7579     2.1895    32.8259    35.4000     2.5741

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   601.9114   147.2459   583.6231  1077.3376     0.5587     0.2868     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5452     4.4975   489.4874   483.1570   554.9116     0.0298     0.4035

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   598.2971     0.0000   598.2971  1077.6981     0.5552     0.3188     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4887   489.8392   483.1021     0.0000     0.0600     0.0461     0.2811
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8669     5.5202     1.2944   518.6196    40.7047   225.1278     1.7452

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 253120.641       0.557     797.788  606836.563   0.141021E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.661   EfDer =  0.999    SH =  0.161816E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     55.773    3744.245       5.520     518.619       1.000       1.000       0.980
 W Kg/sec =  25.352  Wdry =  55.764  WH2O = 0.009  lbm/sec   H2O =   0.066g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    148.511    3744.535       1.381       0.248      53.354      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 131079.484   43759.863       1.358     590.487     434.746     468.502       1.078

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   532.76    -0.18   532.76     0.49     0.79   671.50
 MEAN    18.08     0.00    -0.02   532.76    -0.18   532.76     0.49     0.73
 HUB     15.21     0.00    -0.02   532.76    -0.18   532.76     0.49     0.67

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.58     46.36     5.22   671.47   857.29     4.69   495.80   483.06     1.17
 MEAN    47.96     42.30     5.66   590.70   795.60     4.69   495.80   483.06     1.17
 HUB     43.02     37.84     5.18   496.98   728.71     4.69   495.80   483.06     1.17

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   602.80   292.96   526.83  1111.28      0.54     2.33     2.04     9.02
 MEAN    18.01   619.43   310.08   536.24  1107.30      0.56     2.40     2.13     7.35
 HUB     15.22   675.20   396.74   546.34  1103.63      0.61     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    667.22   646.23   374.26     0.58  5986.04      0.92     0.91
 MEAN   588.47   604.20   278.39     0.55  5587.77      0.92     0.91     0.91     1.42
 HUB    497.41   555.54   100.67     0.50  6042.36      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.22     5.51   550.07     1.06   520.85   497.23     0.55
 MEAN     6.63     1.20     5.37   547.97     1.06   517.13   496.38     0.61
 HUB      6.72     1.22     5.24   550.36     1.06   513.71   497.49     0.67

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.08    35.39    31.50     3.89     0.93     0.37     1.40
 MEAN    30.04    27.44    23.50     3.94     0.92     0.36     1.63
 HUB     35.99    10.44     6.50     3.94     0.92     0.38     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   694.8465   310.9462  621.3889  1100.3154     0.6315    -0.1931     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6742     5.1183   510.6603   497.1315     0.7418    26.5836    30.6000     4.0164

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   585.9120  124.2175  572.5931  1112.3368     0.5267     0.1101     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6499     5.5173   521.8734   496.8602   491.5697     0.0285     0.2763

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   614.3751     0.0000   614.3751  1109.3845     0.5538     0.1776     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3946	519.1302	496.8543	0.0000	0.0600	0.0456	0.0167

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8698	6.6274	1.2006	549.4665	30.8486	257.8339	1.9987

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
191922.359	0.431	604.903	546024.750	0.170123E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.915 EfDer = 0.999 SH = 0.182949E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
55.773	3744.245	6.627	549.466	1.000	1.000	0.980

W Kg/sec = 25.352 Wdry = 55.763 WH2O = 0.010 lbm/sec H2O = 0.087g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
127.325	3637.909	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
113283.359	43759.500	1.463	545.479	372.749	424.468	1.139

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	498.42	-0.17	498.42	0.44	0.74	637.14
MEAN	17.74	0.00	-0.02	498.42	-0.17	498.42	0.44	0.68	
HUB	15.05	0.00	-0.02	498.42	-0.17	498.42	0.44	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.77	46.36	6.41	655.78	823.83	5.80	529.50	496.74	0.47
MEAN	49.31	43.40	5.91	579.60	764.57	5.80	529.50	496.74	0.47
HUB	44.62	38.84	5.78	491.75	700.30	5.80	529.50	496.74	0.47

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	577.30	293.22	497.28	1145.19	0.50	2.26	1.98	8.75
MEAN	17.51	592.06	308.93	505.07	1141.57	0.52	2.34	2.07	6.78
HUB	14.85	644.60	389.66	513.48	1138.21	0.57	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	647.29	610.45	354.06	0.53	5812.22	0.92	0.91		
MEAN	572.02	569.49	263.09	0.50	5411.39	0.92	0.91	0.91	1.45
HUB	485.22	522.30	95.55	0.46	5789.11	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.93	1.20	6.68	579.99	1.06	553.21	508.93	0.26
MEAN	7.84	1.18	6.54	577.88	1.05	549.71	508.15	0.28
HUB	7.93	1.20	6.39	579.87	1.06	546.48	508.96	0.31

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.53	35.45	31.50	3.95	0.93	0.39	1.40
MEAN	31.45	27.51	23.50	4.01	0.92	0.38	1.62
HUB	37.19	10.54	6.50	4.04	0.92	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	657.6006	310.9596	579.4331	1136.1034	0.5788	-0.1745	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8837	6.3001	544.5031	508.7184	0.3234	28.2208	31.5000	3.2792

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	558.9899	121.9399	545.5276	1146.1198	0.4877	0.1170	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8634	6.6965	554.1405	508.5515	451.3937	0.0250	0.3020

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	570.8267	0.0000	570.8267	1144.9803	0.4985	0.2096	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6320	553.0688	508.5189	0.0000	0.0600	0.0403	0.0696

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8769	7.8426	1.1833	579.2444	29.7799	246.0323	1.9072

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
185357.766	0.442	584.213	521307.750	0.194417E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.313 EfDer = 1.000 SH = 0.214165E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
55.773	3744.245	7.843	579.244	1.000	1.000	0.980

W Kg/sec = 25.352 Wdry = 55.762 WH2O = 0.012 lbm/sec H2O = 0.116g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
110.474	3543.166	1.381	0.249	53.355	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
99152.281	43758.965	1.587	513.330	323.443	395.845	1.224

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	463.57	-0.16	463.57	0.40	0.68	595.50
MEAN	16.97	0.00	-0.02	463.57	-0.16	463.57	0.40	0.63	
HUB	14.32	0.00	-0.02	463.57	-0.16	463.57	0.40	0.57	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.63	46.36	7.27	629.31	781.75	7.03	561.98	508.47	0.24
MEAN	50.11	43.80	6.31	554.51	722.88	7.03	561.98	508.47	0.24
HUB	45.28	37.84	7.44	467.90	658.77	7.03	561.98	508.47	0.24

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	545.78	285.75	465.00	1176.18	0.46	2.16	1.89	8.34
MEAN	16.57	557.05	295.88	471.97	1172.57	0.48	2.24	1.97	6.35
HUB	13.89	602.67	365.14	479.46	1169.16	0.52	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	616.90	570.86	331.14	0.49	5398.11	0.92	0.91		
MEAN	541.55	532.08	245.67	0.45	4906.59	0.92	0.91	0.91	1.47
HUB	453.85	487.59	88.71	0.42	5074.10	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.19	1.17	7.95	607.58	1.05	583.65	518.80	0.15
MEAN	9.06	1.16	7.78	605.00	1.04	580.07	517.90	0.16
HUB	9.11	1.16	7.61	605.88	1.05	576.70	518.25	0.17

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.57	35.46	31.50	3.96	0.93	0.40	1.40
MEAN	32.08	27.50	23.50	4.00	0.93	0.39	1.62
HUB	37.29	10.48	6.50	3.98	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	601.8807	297.5440	523.1902	1169.4647	0.5147	-0.1204	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1066	7.6188	577.0612	518.3168	0.1741	29.6274	32.4000	2.7726

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	518.0281	116.1786	504.8324	1177.0787	0.4401	0.1437	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.0910     7.9724   584.6011   518.2144   432.2457     0.0216     0.3246

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   513.7876     0.0000   513.7876  1177.4027     0.4364     0.2355     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.9691   584.9543   518.1616     0.0000     0.0600     0.0392     0.1412

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8787     9.0674     1.1562   606.1470    26.9052   248.2776     1.9246

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 167561.500       0.440     528.122  515061.188   0.229554E-03

Melt Ratio at Stator LE, Throat, TE
0.12663E-01 0.19518E-01 0.36893E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.634   EfDer =  1.000    SH =  0.250323E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     55.773    3744.245       9.067     606.146       1.000       1.000       0.980
 W Kg/sec =  25.352  Wdry =  55.760  WH2O = 0.014  lbm/sec   H2O =   0.153g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     97.744    3463.645       1.380       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  88063.000   43758.344       1.781     509.668     286.200     384.739       1.344

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   414.68    -0.14   414.68     0.35     0.61   553.72
 MEAN   15.91     0.00    -0.02   414.68    -0.14   414.68     0.35     0.56
 HUB    13.07     0.00    -0.02   414.68    -0.14   414.68     0.35     0.50

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    55.29    47.36     7.93   598.60   728.32     8.34   592.34   518.14     0.14
 MEAN   51.43    44.80     6.63   519.95   665.18     8.34   592.34   518.14     0.14
 HUB    45.85    38.84     7.01   427.06   595.37     8.34   592.34   518.14     0.14

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   507.63   285.86   419.49  1204.64      0.42     2.05     1.78     7.43
 MEAN   15.50   512.15   283.69   426.40  1200.50      0.43     2.13     1.86     5.75
 HUB    12.59   545.89   331.53   433.68  1196.51      0.46     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   586.18   515.92   300.32     0.43  5130.97      0.92     0.91
 MEAN  506.38   481.04   222.69     0.40  4398.82      0.92     0.91     0.91     1.52
 HUB   411.37   440.97    79.84     0.37  4175.89      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.48     1.16     9.29   633.06     1.04   612.37   527.28     0.10
 MEAN   10.27     1.13     9.07   629.22     1.04   608.16   526.02     0.10
 HUB    10.20     1.13     8.86   628.05     1.04   604.13   525.66     0.11

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    34.27    35.60    31.50     4.10     0.93     0.43     1.40
 MEAN   33.64    27.58    23.50     4.08     0.93     0.41     1.64
 HUB    37.40    10.43     6.50     3.93     0.93     0.40     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   570.1560   288.8942   491.5465  1196.3442     0.4766    -0.1992     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.2907     8.8267   604.0222   526.3030     0.1136    30.4438    33.0000     2.5562
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   497.0560   113.5032   483.9232  1202.5277     0.4133     0.0540     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.2663     9.1415   610.2814   526.2027   410.5396     0.0397     0.3388

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   481.4974     0.0000   481.4974  1203.6995     0.4000     0.2612     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.2091   611.5035   526.2010     0.0000     0.0600     0.0388     0.1085

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8811    10.2673     1.1323   630.1045    23.9620   255.0995     1.9775

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 149327.156       0.435     470.651  523122.063   0.263244E-03

Melt Ratio at Stator LE, Throat, TE
0.10051E+00 0.11047E+00 0.13778E+00
 trTOT =     1.3184   Tt4 =   630.1045   T1  =   477.9162

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    947289.38   2985.6772    184.5384      2.4076      0.8610      4.7224      1.3184     37.3740
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50µm, ISA +18R

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*********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
*********************************************************************

       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.825   EfDer =  0.984    SH =  0.470373E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     63.104    3888.739       4.265     457.738       1.000       1.000       0.980
 W Kg/sec =  28.684  Wdry =  63.101  WH2O = 0.003  lbm/sec   H2O =   0.017g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     204.333    4139.589       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 168217.859   49513.680       1.390     831.557     598.101     619.754       1.036

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   485.50    -0.17   485.50     0.48     0.84   745.23
 MEAN    17.06     0.00    -0.02   485.50    -0.17   485.50     0.48     0.74
 HUB     12.51     0.00    -0.02   485.50    -0.17   485.50     0.48     0.63

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.27    50.47     4.80   700.09   852.10     3.66   438.78   448.40     3.54
 MEAN    50.03    47.20     2.83   578.95   755.70     3.66   438.78   448.40     3.54
 HUB     41.18    38.62     2.56   424.53   645.05     3.66   438.78   448.40     3.54

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   728.14   352.66   637.04  1038.53     0.70     7.29     6.52    16.04
 MEAN    18.04   773.28   411.15   654.92  1033.16     0.75     7.43     6.80    12.53
 HUB     15.00   914.41   580.07   706.87  1019.13     0.90     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    700.09   725.62   347.43     0.70  7278.91     0.92     0.90
 MEAN   612.06   685.04   200.91     0.66  7418.39     0.92     0.90      0.90     1.21
 HUB    509.03   710.43    71.03     0.70  8703.07     0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.60     1.31     4.05   497.48     1.09   454.83   473.93     1.78
 MEAN     5.63     1.32     3.90   498.24     1.09   450.14   474.48     2.15
 HUB      5.89     1.38     3.51   505.25     1.10   437.99   478.98     3.59

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.97    28.61    24.20     4.41     0.93     0.26     1.80
 MEAN    32.12    17.05    12.70     4.35     0.91     0.22     2.22
 HUB     39.37    -5.74    -9.30     3.56     0.91     0.06     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.984       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   836.5598   410.3527   729.0013  1026.1261     0.8153    -0.1085     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.6891     3.6925   444.0272   475.8420     2.7746    29.3750    35.4000     6.0250

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   681.9921   166.8361   661.2708  1047.7100     0.6509     0.2262     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.6275     4.2470   462.9096   475.2237   554.9116     0.0426     0.3573

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   684.4077     0.0000   684.4077  1047.3927     0.6534     0.2507     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.1930	462.6477	475.0965	0.0000	0.0600	0.0744	0.1977

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8211	5.5676	1.3055	500.3225	42.5850	238.3406	1.8476

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
264727.969	0.540	944.038	727627.125	0.480804E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.416 EfDer = 0.989 SH = 0.488788E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.104	3888.739	5.568	500.322	1.000	1.000	0.980

W Kg/sec = 28.684 Wdry = 63.101 WH2O = 0.003 lbm/sec H2O = 0.020g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
163.635	3959.514	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
147267.531	49513.645	1.233	590.487	478.983	468.502	0.978

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	598.56	-0.21	598.56	0.57	0.87	710.05
MEAN	18.08	0.00	-0.02	598.56	-0.21	598.56	0.57	0.81	
HUB	15.21	0.00	-0.02	598.56	-0.21	598.56	0.57	0.75	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.37	46.36	3.01	697.38	919.18	4.49	471.51	474.98	0.94
MEAN	45.72	42.30	3.42	613.50	857.27	4.49	471.51	474.98	0.94
HUB	40.78	37.84	2.94	516.16	790.51	4.49	471.51	474.98	0.94

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	648.42	273.77	587.79	1085.62	0.60	2.33	2.04	9.02
MEAN	18.01	668.23	299.55	597.34	1082.16	0.62	2.40	2.13	7.35
HUB	15.22	729.50	403.24	607.92	1079.05	0.68	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	692.97	721.95	419.19	0.67	5594.72	0.92	0.90		
MEAN	611.18	673.74	311.63	0.62	5398.56	0.92	0.90	0.90	1.37
HUB	516.60	618.40	113.36	0.57	6141.72	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.76	1.21	5.33	530.86	1.06	497.05	490.43	0.38
MEAN	6.72	1.21	5.21	529.79	1.06	493.88	489.95	0.42
HUB	6.89	1.24	5.09	533.85	1.07	491.05	491.90	0.46

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	24.97	35.50	31.50	4.00	0.93	0.32	1.40
MEAN	26.63	27.55	23.50	4.05	0.92	0.32	1.63
HUB	33.56	10.56	6.50	4.06	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.989	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	767.1357	300.3882	705.8783	1071.4468	0.7160	-0.2389	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7754	4.8331	484.1755	490.8363	0.5853	23.0523	30.6000	7.5477

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	663.8070	140.7318	648.7174	1084.5320	0.6121	0.0169	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7240	5.2371	496.0635	490.5897	491.5697	0.0425	0.2182

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	707.5146	0.0000	707.5146	1079.2352	0.6556	0.0937	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0150	491.2467	490.5086	0.0000	0.0600	0.0762	-0.1235

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8212	6.6708	1.1981	531.4995	31.1778	281.6879	2.1836

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
193878.422	0.404	691.384	658794.688	0.490935E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.774 EfDer = 0.991 SH = 0.491262E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.104	3888.739	6.671	531.499	1.000	1.000	0.980

W Kg/sec = 28.684 Wdry = 63.101 WH2O = 0.003 lbm/sec H2O = 0.024g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
140.764	3841.629	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
126849.648	49513.637	1.324	545.479	412.051	424.468	1.030

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	558.11	-0.19	558.11	0.51	0.80	672.82
MEAN	17.74	0.00	-0.02	558.11	-0.19	558.11	0.51	0.75	
HUB	15.05	0.00	-0.02	558.11	-0.19	558.11	0.51	0.69	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.68	46.36	4.32	681.09	880.70	5.60	506.45	490.39	0.28
MEAN	47.17	43.40	3.77	601.97	821.03	5.60	506.45	490.39	0.28
HUB	42.47	38.84	3.63	510.73	756.66	5.60	506.45	490.39	0.28

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	618.95	276.67	553.67	1121.64	0.55	2.26	1.98	8.75
MEAN	17.51	636.89	300.24	561.68	1118.42	0.57	2.34	2.07	6.78
HUB	14.85	694.89	396.63	570.57	1115.50	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	672.27	680.47	395.59	0.61	5484.76	0.92	0.91		
MEAN	594.10	633.91	293.86	0.57	5259.58	0.92	0.91	0.91	1.39
HUB	503.94	580.57	107.31	0.52	5892.87	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.99	1.20	6.51	561.43	1.06	530.63	503.50	0.14
MEAN	7.93	1.19	6.38	560.20	1.05	527.59	503.00	0.15
HUB	8.10	1.21	6.25	563.66	1.06	524.83	504.45	0.16

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.55	35.55	31.50	4.05	0.93	0.34	1.40
MEAN	28.13	27.62	23.50	4.12	0.92	0.34	1.62
HUB	34.81	10.65	6.50	4.15	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.991	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	719.0605	302.2104	652.4699	1110.5226	0.6475	-0.2068	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9895	6.0471	520.1974	503.6555	0.1837	24.8526	31.5000	6.6474

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	629.5907	137.3410	614.4281	1120.8384	0.5617	0.0308	2.3726

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.9479     6.4321   529.8958   503.5070   451.3937     0.0356     0.2513

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   647.0823     0.0000   647.0823  1118.9177     0.5783     0.1405     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3200   528.1037   503.4174     0.0000     0.0600     0.0614    -0.0382

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8430     7.9060     1.1852   561.7626    30.2641   267.2670     2.0718

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 188255.766       0.417     671.333  622580.813   0.493694E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 4.349   EfDer =  0.994    SH =  0.496608E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     63.104    3888.739       7.906     561.762       1.000       1.000       0.980
 W Kg/sec =  28.684  Wdry =  63.101  WH2O = 0.003  lbm/sec   H2O =   0.027g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    122.106    3736.719       1.381       0.249      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 110367.977   49513.625       1.436     513.330     357.452     395.845       1.107

ROTOR LEADING EDGE CONDITIONS, STAGE   4

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    19.26     0.00    -0.02   516.01    -0.18   516.01     0.46     0.74   628.03
 MEAN   16.97     0.00    -0.02   516.01    -0.18   516.01     0.46     0.68
 HUB    14.32     0.00    -0.02   516.01    -0.18   516.01     0.46     0.63

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    51.72    46.36     5.36   653.60   832.88     6.87   540.36   503.37     0.11
 MEAN   48.15    43.80     4.35   575.91   773.40     6.87   540.36   503.37     0.11
 HUB    43.29    37.84     5.45   485.96   708.94     6.87   540.36   503.37     0.11

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    18.88   582.72   272.89   514.87  1154.85      0.50     2.16     1.89     8.34
 MEAN   16.57   597.23   289.52   522.37  1151.45      0.52     2.24     1.97     6.35
 HUB    13.89   648.14   372.34   530.52  1148.29      0.56     2.26     2.10     4.19

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   640.70   632.76   367.81     0.55  5155.60      0.92     0.91
 MEAN  562.45   589.37   272.93     0.51  4801.41      0.92     0.91     0.91     1.42
 HUB   471.37   539.68    99.02     0.47  5174.37      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     9.29     1.18     7.83   589.89     1.05   562.59   514.41     0.06
 MEAN    9.19     1.16     7.67   587.95     1.05   559.29   513.68     0.07
 HUB     9.30     1.18     7.51   589.99     1.05   556.22   514.46     0.07

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    27.92    35.54    31.50     4.04     0.93     0.36     1.40
 MEAN   29.00    27.59    23.50     4.09     0.92     0.35     1.62
 HUB    35.06    10.57     6.50     4.07     0.92     0.37     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   651.2233   291.1436   582.5179  1147.1838     0.5677    -0.1379     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.2433     7.4481   555.1974   514.1618     0.0721    26.5560    32.4000     5.8440
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   577.6968   129.5605   562.9811  1154.6641     0.5003     0.0718     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.2127     7.7814   562.4577   514.0717   432.2457     0.0292     0.2811

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   573.1284     0.0000   573.1284  1155.0750     0.4962     0.1833     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.7772   562.8824   514.0033     0.0000     0.0600     0.0481     0.0691

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8607     9.1826     1.1615   589.2754    27.5144   267.6786     2.0750

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 171222.063       0.417     610.590  609604.375   0.500520E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 4.946   EfDer =  0.997    SH =  0.507613E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     63.104    3888.739       9.183     589.275       1.000       1.000       0.980
 W Kg/sec =  28.684  Wdry =  63.101  WH2O = 0.003  lbm/sec   H2O =   0.032g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    107.674    3648.445       1.381       0.249      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  97123.633   49513.605       1.617     509.668     315.222     384.739       1.221

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   457.35    -0.16   457.35     0.39     0.66   583.27
 MEAN    15.91     0.00    -0.02   457.35    -0.16   457.35     0.39     0.61
 HUB     13.07     0.00    -0.02   457.35    -0.16   457.35     0.39     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.67    47.36     6.31   621.70   771.93     8.27   572.47   513.98     0.05
 MEAN    49.75    44.80     4.95   540.02   707.78     8.27   572.47   513.98     0.05
 HUB     44.13    38.84     5.29   443.54   637.21     8.27   572.47   513.98     0.05

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   537.84   278.44   460.16  1185.82      0.45     2.05     1.78     7.43
 MEAN    15.50   545.75   280.72   468.01  1181.61      0.46     2.13     1.86     5.75
 HUB     12.59   584.60   338.94   476.32  1177.61      0.50     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    608.81   566.47   330.37     0.48  4998.01      0.92     0.91
 MEAN   525.92   528.36   245.20     0.45  4353.04      0.92     0.91     0.91     1.47
 HUB    427.25   484.44    88.31     0.41  4269.25      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.67     1.16     9.28   616.53     1.05   593.29   523.83     0.03
 MEAN    10.47     1.14     9.06   613.01     1.04   589.08   522.60     0.03
 HUB     10.44     1.14     8.84   612.55     1.04   585.10   522.45     0.04

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.18    35.68    31.50     4.18     0.93     0.39     1.40
 MEAN    30.96    27.65    23.50     4.15     0.92     0.37     1.64
 HUB     35.43    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   613.5391   285.8705   542.8705  1176.2482     0.5216    -0.2187     2.0437
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    Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
   10.4949     8.7387   583.7950   522.9138     0.0379    27.7709    33.0000     5.2291

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   550.4341   125.6921   535.8910  1182.1819     0.4656    -0.0246     2.1315

   BlockageTh  PtTh      PsTh       TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4491     9.0237   589.6935   522.8042   410.5396     0.0512     0.3017

    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   531.8278     0.0000   531.8278  1183.7786     0.4493     0.2175     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.1208   591.3127   522.8184     0.0000     0.0600     0.0458     0.0417

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
    0.8685    10.4570     1.1388   614.0280    24.7545   271.7217     2.1064

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 154122.766       0.416     549.613  613687.750   0.514635E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3414   Tt4 =   614.0280   T1  =   457.7381

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    972206.94   3466.9580    204.3327      2.4520      0.8224      2.8251      1.3414     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 84.0%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.055   EfDer =  0.993    SH =  0.473126E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     58.952    3728.441       4.265     457.738       1.000       1.000       0.980
  W Kg/sec =  26.796  Wdry =  58.950  WH2O = 0.003  lbm/sec   H2O =   0.017g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     190.889    3968.951       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 154375.625   46256.027       1.488     831.557     558.751     619.754       1.109

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   445.55    -0.15   445.55     0.44     0.79   714.51
 MEAN    17.06     0.00    -0.02   445.55    -0.15   445.55     0.44     0.70
 HUB     12.51     0.00    -0.02   445.55    -0.15   445.55     0.44     0.59

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.43    50.47     5.96   671.23   805.78     3.75   441.77   448.35     3.13
 MEAN    51.25    47.20     4.05   555.08   711.90     3.75   441.77   448.35     3.13
 HUB     42.42    38.62     3.80   407.04   603.59     3.75   441.77   448.35     3.13

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   679.64   355.42   579.30  1043.25      0.65     7.29     6.52    16.04
 MEAN    18.04   719.41   404.37   595.00  1037.92      0.69     7.43     6.80    12.53
 HUB     15.00   838.62   551.01   632.20  1026.59      0.82     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    671.23   659.79   315.82     0.63  7335.40      0.92     0.91
 MEAN   586.83   622.35   182.46     0.60  7295.85      0.92     0.91     0.91     1.26
 HUB    488.05   635.32    62.96     0.62  8267.11      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.56     1.30     4.20   496.13     1.08   458.98   473.10     1.53
 MEAN     5.56     1.30     4.04   495.93     1.08   454.30   473.07     1.84
 HUB      5.75     1.35     3.72   501.01     1.09   444.44   476.30     2.75

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.53    28.60    24.20     4.40     0.93     0.30     1.80
 MEAN    34.20    17.05    12.70     4.35     0.92     0.26     2.22
 HUB     41.07    -5.69    -9.30     3.61     0.92     0.11     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   768.5444   403.5849   654.0488  1033.2013     0.7438    -0.0897     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.6060     3.8981   450.1786   474.1646     2.1717    31.6769    35.4000     3.7231

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   617.0828   150.9573   598.3336  1052.3896     0.5864     0.2667     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5685     4.4243   467.0610   473.7608   554.9116     0.0329     0.3882

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   614.4775     0.0000   614.4775  1052.6631     0.5837     0.2980     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4070   467.3217   473.6884     0.0000     0.0600     0.0530     0.2561
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8557     5.5358     1.2981   497.6898    39.9529   229.6347     1.7801

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 248376.016       0.551     827.452  667752.563   0.486384E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 4.909   EfDer =  0.997    SH =  0.496737E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     58.952    3728.441       5.536     497.690       1.000       1.000       0.980
 W Kg/sec =  26.796  Wdry =  58.949  WH2O = 0.003  lbm/sec   H2O =   0.021g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    153.342    3806.326       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 134013.641   46255.984       1.316     590.487     448.855     468.502       1.044

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   544.69    -0.19   544.69     0.51     0.81   682.58
 MEAN    18.08     0.00    -0.02   544.69    -0.19   544.69     0.51     0.76
 HUB     15.21     0.00    -0.02   544.69    -0.19   544.69     0.51     0.69

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     50.84    46.36     4.48   668.63   862.56     4.63   473.83   473.62     0.89
 MEAN    47.21    42.30     4.91   588.21   801.81     4.63   473.83   473.62     0.89
 HUB     42.27    37.84     4.43   494.88   736.06     4.63   473.83   473.62     0.89

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   607.11   282.01   537.63  1086.88      0.56     2.33     2.04     9.02
 MEAN    18.01   624.61   301.60   546.97  1083.11      0.58     2.40     2.13     7.35
 HUB     15.22   681.32   392.28   557.06  1079.68      0.63     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    664.40   659.75   382.39     0.61  5762.50      0.92     0.91
 MEAN   585.99   616.49   284.39     0.57  5435.10      0.92     0.91     0.91     1.40
 HUB    495.31   566.51   103.03     0.52  5974.48      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.73     1.22     5.46   527.85     1.06   498.20   489.19     0.38
 MEAN     6.65     1.20     5.33   526.13     1.06   494.76   488.38     0.43
 HUB      6.77     1.22     5.20   528.96     1.06   491.62   489.78     0.47

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     27.68    35.42    31.50     3.92     0.93     0.35     1.40
 MEAN    28.87    27.47    23.50     3.97     0.92     0.35     1.63
 HUB     35.15    10.48     6.50     3.98     0.92     0.37     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   705.1759   302.4415  637.0261  1075.2897     0.6558    -0.2058     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7041     5.0392   487.6581   489.1562     0.5373    25.3970    30.6000     5.2030

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   600.3012  127.2681  586.6552  1087.3658     0.5521     0.0808     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6733    5.4385   498.6666   488.9868   491.5697     0.0321     0.2579

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   631.7528     0.0000   631.7528  1083.9471     0.5828     0.1524     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.2929	495.5530	488.9429	0.0000	0.0600	0.0533	-0.0237

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8583	6.6439	1.2002	527.6454	29.9565	265.4713	2.0579

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
186287.219	0.422	620.606	601609.000	0.499595E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.204 EfDer = 0.998 SH = 0.501570E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.952	3728.441	6.644	527.645	1.000	1.000	0.980

W Kg/sec = 26.796 Wdry = 58.949 WH2O = 0.003 lbm/sec H2O = 0.025g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
131.556	3696.701	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
115667.359	46255.977	1.416	545.479	385.096	424.468	1.102

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	508.91	-0.18	508.91	0.46	0.76	647.44
MEAN	17.74	0.00	-0.02	508.91	-0.18	508.91	0.46	0.70	
HUB	15.05	0.00	-0.02	508.91	-0.18	508.91	0.46	0.64	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.08	46.36	5.72	653.01	828.04	5.74	506.82	488.87	0.29
MEAN	48.60	43.40	5.20	577.15	769.61	5.74	506.82	488.87	0.29
HUB	43.91	38.84	5.07	489.68	706.36	5.74	506.82	488.87	0.29

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	580.70	283.22	506.94	1120.87	0.52	2.26	1.98	8.75
MEAN	17.51	596.33	301.15	514.70	1117.43	0.53	2.34	2.07	6.78
HUB	14.85	649.83	385.51	523.13	1114.25	0.58	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	644.55	622.54	361.33	0.56	5614.18	0.92	0.91		
MEAN	569.61	580.51	268.45	0.52	5275.24	0.92	0.91	0.91	1.43
HUB	483.17	532.17	97.66	0.48	5727.50	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.95	1.20	6.64	557.02	1.06	529.91	502.04	0.15
MEAN	7.87	1.18	6.50	555.25	1.05	526.65	501.29	0.16
HUB	7.98	1.20	6.35	557.61	1.06	523.66	502.32	0.17

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	29.19	35.48	31.50	3.98	0.93	0.37	1.40
MEAN	30.33	27.55	23.50	4.05	0.92	0.37	1.62
HUB	36.39	10.57	6.50	4.07	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.998	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	665.4915	303.1279	592.4461	1111.4019	0.5988	-0.1839	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9179	6.2315	521.0225	501.8815	0.1879	27.0968	31.5000	4.4032

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	571.5968	124.6900	557.8309	1121.3226	0.5098	0.0897	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8925	6.6244	530.3593	501.7773	451.3937	0.0277	0.2857

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	584.4047	0.0000	584.4047	1120.0428	0.5218	0.1893	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.5507	529.1714	501.7275	0.0000	0.0600	0.0445	0.0384

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8701	7.8684	1.1843	556.6248	28.9805	252.7778	1.9595

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
180272.391	0.434	600.568	572629.563	0.504999E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 5.666 EfDer = 0.999 SH = 0.510548E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.952	3728.441	7.868	556.625	1.000	1.000	0.980

W Kg/sec = 26.796 Wdry = 58.949 WH2O = 0.003 lbm/sec H2O = 0.029g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
114.092	3599.184	1.381	0.249	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
101021.844	46255.961	1.537	513.330	333.992	395.845	1.185

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	472.31	-0.16	472.31	0.42	0.69	604.92
MEAN	16.97	0.00	-0.02	472.31	-0.16	472.31	0.42	0.64	
HUB	14.32	0.00	-0.02	472.31	-0.16	472.31	0.42	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.00	46.36	6.64	626.66	784.85	6.99	538.69	501.69	0.12
MEAN	49.47	43.80	5.67	552.17	726.74	6.99	538.69	501.69	0.12
HUB	44.62	37.84	6.78	465.93	663.57	6.99	538.69	501.69	0.12

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	548.24	277.09	473.06	1152.02	0.48	2.16	1.89	8.34
MEAN	16.57	560.40	289.07	480.09	1148.53	0.49	2.24	1.97	6.35
HUB	13.89	607.01	361.47	487.65	1145.25	0.53	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	614.29	580.94	337.21	0.50	5234.58	0.92	0.91		
MEAN	539.26	541.37	250.19	0.47	4793.80	0.92	0.91	0.91	1.45
HUB	451.94	495.97	90.46	0.43	5023.20	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.23	1.17	7.92	584.00	1.05	559.84	512.71	0.07
MEAN	9.11	1.16	7.75	581.70	1.05	556.46	511.83	0.07
HUB	9.17	1.17	7.59	582.90	1.05	553.28	512.30	0.08

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.36	35.48	31.50	3.98	0.93	0.38	1.40
MEAN	31.05	27.53	23.50	4.03	0.92	0.38	1.62
HUB	36.55	10.51	6.50	4.01	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	607.1664	290.6972	533.0536	1145.1653	0.5302	-0.1256	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1540	7.5769	553.2408	512.2585	0.0803	28.6055	32.4000	3.7945

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	528.0408	118.4241	514.5899	1152.6117	0.4581	0.1206	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.1348	7.9248	560.4587	512.1949	432.2457	0.0236	0.3100

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	523.7514	0.0000	523.7514	1152.9614	0.4543	0.2184	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9213	560.8229	512.1381	0.0000	0.0600	0.0415	0.1181

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8745	9.1095	1.1577	582.8641	26.2410	254.4248	1.9723

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
163294.453	0.433	544.007	564279.438	0.516740E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.067 EfDer = 0.999 SH = 0.526254E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.952	3728.441	9.109	582.864	1.000	1.000	0.980

W Kg/sec = 26.796 Wdry = 58.949 WH2O = 0.003 lbm/sec H2O = 0.033g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
100.844	3517.238	1.381	0.249	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
89486.250	46255.934	1.726	509.668	295.228	384.739	1.303

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	421.39	-0.15	421.39	0.36	0.63	562.29
MEAN	15.91	0.00	-0.02	421.39	-0.15	421.39	0.36	0.58	
HUB	13.07	0.00	-0.02	421.39	-0.15	421.39	0.36	0.52	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.75	47.36	7.39	596.07	730.10	8.33	568.60	512.12	0.06
MEAN	50.87	44.80	6.07	517.76	667.67	8.33	568.60	512.12	0.06
HUB	45.27	38.84	6.43	425.26	598.78	8.33	568.60	512.12	0.06

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	508.77	278.72	425.64	1180.76	0.43	2.05	1.78	7.43
MEAN	15.50	514.33	278.04	432.70	1176.66	0.44	2.13	1.86	5.75
HUB	12.59	549.17	328.39	440.16	1172.74	0.47	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	583.71	523.63	304.99	0.44	5002.87	0.92	0.91		
MEAN	504.24	488.26	226.20	0.41	4311.23	0.92	0.91	0.91	1.50
HUB	409.64	447.60	81.24	0.38	4136.39	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.54	1.16	9.29	609.02	1.04	588.22	521.82	0.04
MEAN	10.33	1.13	9.08	605.40	1.04	584.15	520.53	0.04
HUB	10.28	1.13	8.86	604.49	1.04	580.26	520.20	0.04

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.22	35.62	31.50	4.12	0.93	0.42	1.40
MEAN	32.72	27.60	23.50	4.10	0.93	0.39	1.64
HUB	36.73	10.46	6.50	3.96	0.93	0.39	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	574.3334	283.1360	499.6928	1172.2385	0.4899	-0.2053	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3582	8.8086	579.8073	520.8080	0.0443	29.5368	33.0000	3.4632

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   505.6795   115.4723   492.3189  1178.2456     0.4292     0.0286     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.3285     9.1150   585.7625   520.7327   410.5396     0.0427     0.3260

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   489.5190     0.0000   489.5190  1179.5205     0.4150     0.2464     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.1905   587.0556   520.7363     0.0000     0.0600     0.0407     0.0864

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8780    10.3311     1.1341   606.3013    23.4390   260.5340     2.0196

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 145923.578       0.428     486.137  571701.938   0.535296E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3246   Tt4 =   606.3013   T1  =   457.7377

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    924153.63   3078.7695    190.8891      2.4225      0.8520      4.0545      1.3246     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 79.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.490   EfDer =  0.995    SH =  0.474081E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     57.631    3683.296       4.265     457.738       1.000       1.000       0.980
  W Kg/sec =  26.196  Wdry =  57.628  WH2O = 0.003  lbm/sec   H2O =   0.018g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     186.611   3920.894       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 150146.031   45219.445       1.522     831.557     546.230     619.754       1.135

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   433.34    -0.15   433.34     0.42     0.77   705.86
 MEAN    17.06     0.00    -0.02   433.34    -0.15   433.34     0.42     0.68
 HUB     12.51     0.00    -0.02   433.34    -0.15   433.34     0.42     0.58

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.84    50.47     6.37   663.11   792.27     3.78   442.63   448.34     3.02
 MEAN    51.69    47.20     4.49   548.36   699.04     3.78   442.63   448.34     3.02
 HUB     42.87    38.62     4.25   402.11   591.27     3.78   442.63   448.34     3.02

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   665.74   356.75   562.08  1044.59      0.64     7.29     6.52    16.04
 MEAN    18.04   703.85   402.77   577.22  1039.25      0.68     7.43     6.80    12.53
 HUB     15.00   817.53   542.93   611.21  1028.51      0.79     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    663.11   640.15   306.35     0.61  7362.87      0.92     0.91
 MEAN   579.73   603.74   176.96     0.58  7266.88      0.92     0.91     0.91     1.28
 HUB    482.14   614.23    60.79     0.60  8145.78      0.92     0.91

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP       5.55     1.30     4.24   495.81     1.08   460.16   472.90     1.46
 MEAN      5.54     1.30     4.09   495.31     1.08   455.46   472.70     1.76
 HUB       5.71     1.34     3.78   499.86     1.09   446.10   475.58     2.58

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      32.40    28.59    24.20     4.39     0.93     0.32     1.80
 MEAN     34.91    17.04    12.70     4.34     0.92     0.27     2.22
 HUB      41.61    -5.68    -9.30     3.62     0.92     0.13     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.995       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   749.6144   401.9857   632.7157  1035.0524     0.7242    -0.0849     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.5839     3.9534   451.7950   473.7292     2.0408    32.4292    35.4000     2.9708

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   598.1852   146.3344   580.0101  1053.6843     0.5677     0.2797     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.5514     4.4728   468.2128   473.3686   554.9116     0.0307     0.3981

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   594.8980     0.0000   594.8980  1054.0219     0.5644     0.3117     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.4616   468.5306   473.3078     0.0000     0.0600     0.0482     0.2726
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8635     5.5240     1.2953   496.9940    39.2572   226.6901     1.7573

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 244053.844       0.555     794.832  649457.438   0.488015E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.396   EfDer =  0.998    SH =  0.499195E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     57.631    3683.296       5.524     496.994       1.000       1.000       0.980
 W Kg/sec =  26.196  Wdry =  57.628  WH2O = 0.003  lbm/sec   H2O =   0.021g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    150.119    3762.870       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 130148.711   45219.402       1.344     590.487     439.421     468.502       1.066

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   528.98    -0.18   528.98     0.50     0.80   674.79
 MEAN    18.08     0.00    -0.02   528.98    -0.18   528.98     0.50     0.74
 HUB     15.21     0.00    -0.02   528.98    -0.18   528.98     0.50     0.68

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.32    46.36     4.96   660.53   846.39     4.67   474.49   473.25     0.87
 MEAN    47.70    42.30     5.40   581.09   785.94     4.67   474.49   473.25     0.87
 HUB     42.76    37.84     4.92   488.89   720.43     4.67   474.49   473.25     0.87

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   595.39   284.76   522.88  1087.27      0.55     2.33     2.04     9.02
 MEAN    18.01   612.09   302.50   532.11  1083.43      0.56     2.40     2.13     7.35
 HUB     15.22   667.37   389.32   542.05  1079.90      0.62     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    656.36   641.47   371.60     0.59  5818.55      0.92     0.91
 MEAN   578.89   599.61   276.39     0.55  5451.36      0.92     0.91     0.91     1.42
 HUB    489.31   551.19    99.99     0.51  5929.33      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.22     5.49   527.08     1.06   498.57   488.86     0.38
 MEAN     6.63     1.20     5.35   525.18     1.06   495.05   487.96     0.43
 HUB      6.74     1.22     5.22   527.65     1.06   491.83   489.19     0.47

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.57    35.40    31.50     3.90     0.93     0.36     1.40
 MEAN    29.62    27.45    23.50     3.95     0.92     0.36     1.63
 HUB     35.69    10.45     6.50     3.95     0.92     0.37     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   688.0723   303.3523   617.5928  1076.2855     0.6393    -0.1973     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6807     5.0907   488.5626   488.6991     0.5258    26.1596    30.6000     4.4404

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   582.2867   123.4489   569.0502  1088.1284     0.5351     0.0998     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6544     5.4888   499.3682   488.5464   491.5697     0.0297     0.2698

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   611.2584     0.0000   611.2584  1085.0785     0.5633     0.1688     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3590	496.5898	488.5105	0.0000	0.0600	0.0480	0.0028

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8662	6.6298	1.2002	526.6335	29.6403	260.5113	2.0195

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
184322.078	0.428	600.299	584450.125	0.502231E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.658 EfDer = 0.999 SH = 0.505524E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.631	3683.296	6.630	526.633	1.000	1.000	0.980

W Kg/sec = 26.196 Wdry = 57.628 WH2O = 0.003 lbm/sec H2O = 0.025g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
128.757	3655.447	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
112454.984	45219.387	1.447	545.479	376.903	424.468	1.126

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	494.78	-0.17	494.78	0.45	0.74	640.21
MEAN	17.74	0.00	-0.02	494.78	-0.17	494.78	0.45	0.69	
HUB	15.05	0.00	-0.02	494.78	-0.17	494.78	0.45	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.52	46.36	6.16	645.11	813.14	5.78	506.95	488.45	0.29
MEAN	49.06	43.40	5.66	570.16	755.04	5.78	506.95	488.45	0.29
HUB	44.36	38.84	5.52	483.75	692.09	5.78	506.95	488.45	0.29

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	570.00	285.27	493.48	1120.69	0.51	2.26	1.98	8.75
MEAN	17.51	584.87	301.56	501.13	1117.19	0.52	2.34	2.07	6.78
HUB	14.85	636.97	382.41	509.41	1113.94	0.57	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	636.75	605.86	351.48	0.54	5654.59	0.92	0.91		
MEAN	562.71	565.10	261.15	0.51	5282.22	0.92	0.91	0.91	1.44
HUB	477.32	518.17	94.91	0.47	5681.31	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.93	1.20	6.66	555.86	1.06	529.74	501.63	0.15
MEAN	7.84	1.18	6.52	553.94	1.05	526.43	500.81	0.16
HUB	7.94	1.20	6.38	556.00	1.06	523.38	501.72	0.18

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.03	35.46	31.50	3.96	0.93	0.38	1.40
MEAN	31.04	27.53	23.50	4.03	0.92	0.37	1.62
HUB	36.90	10.55	6.50	4.05	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	650.6728	303.5342	575.5363	1111.6224	0.5853	-0.1778	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8893	6.2733	521.2296	501.3807	0.1893	27.8069	31.5000	3.6931

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	555.3069	121.1364	541.9333	1121.4427	0.4952	0.1071	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8673	6.6674	530.4743	501.2862	451.3937	0.0259	0.2960

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	567.2315	0.0000	567.2315	1120.2839	0.5063	0.2025	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6006	529.4005	501.2422	0.0000	0.0600	0.0413	0.0588

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8751	7.8460	1.1834	555.2639	28.6315	248.4722	1.9261

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
178101.813	0.439	580.040	557410.500	0.509397E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.073 EfDer = 0.999 SH = 0.515200E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.631	3683.296	7.846	555.264	1.000	1.000	0.980

W Kg/sec = 26.196 Wdry = 57.628 WH2O = 0.003 lbm/sec H2O = 0.029g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
111.716	3559.959	1.381	0.249	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
98371.508	45219.371	1.570	513.330	327.036	395.845	1.210

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	459.92	-0.16	459.92	0.41	0.68	598.32
MEAN	16.97	0.00	-0.02	459.92	-0.16	459.92	0.41	0.63	
HUB	14.32	0.00	-0.02	459.92	-0.16	459.92	0.41	0.58	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.40	46.36	7.04	619.07	771.34	7.01	538.26	501.21	0.12
MEAN	49.87	43.80	6.07	545.49	713.62	7.01	538.26	501.21	0.12
HUB	45.03	37.84	7.19	460.29	650.80	7.01	538.26	501.21	0.12

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	538.66	278.32	461.19	1151.27	0.47	2.16	1.89	8.34
MEAN	16.57	550.10	289.00	468.06	1147.76	0.48	2.24	1.97	6.35
HUB	13.89	595.42	358.43	475.45	1144.45	0.52	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	606.86	566.24	328.54	0.49	5257.68	0.92	0.91		
MEAN	532.73	527.72	243.73	0.46	4792.57	0.92	0.91	0.91	1.47
HUB	446.46	483.53	88.04	0.42	4980.80	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.19	1.17	7.93	582.43	1.05	559.11	512.21	0.07
MEAN	9.07	1.16	7.77	580.03	1.04	555.70	511.28	0.08
HUB	9.12	1.16	7.60	581.00	1.05	552.50	511.67	0.08

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.11	35.47	31.50	3.97	0.93	0.39	1.40
MEAN	31.69	27.51	23.50	4.01	0.93	0.38	1.62
HUB	37.01	10.49	6.50	3.99	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	594.9504	290.6271	519.1357	1144.6138	0.5198	-0.1223	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1143	7.5984	552.7067	511.7034	0.0826	29.2414	32.4000	3.1586

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	514.1414	115.3069	501.0446	1152.0466	0.4463	0.1350	2.2705

```
   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.0975     7.9488   559.9086   511.6454   432.2457     0.0223     0.3190

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   509.9442     0.0000   509.9442  1152.3789     0.4425     0.2290     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.9455   560.2556   511.5914     0.0000     0.0600     0.0400     0.1325

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8774     9.0734     1.1564   581.1501    25.8879   250.5591     1.9423

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 161096.359       0.437     524.657  550254.938   0.521801E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.415   EfDer =  1.000    SH =  0.532872E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     57.631    3683.296       9.073     581.150       1.000       1.000       0.980
 W Kg/sec =  26.196  Wdry =  57.628  WH2O = 0.003  lbm/sec   H2O =   0.034g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     98.831    3479.770       1.381       0.249      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  87310.016   45219.340       1.762     509.668     289.333     384.739       1.330

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   411.14    -0.14   411.14     0.35     0.62   556.30
 MEAN   15.91     0.00    -0.02   411.14    -0.14   411.14     0.35     0.57
 HUB    13.07     0.00    -0.02   411.14    -0.14   411.14     0.35     0.51

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    55.08    47.36     7.72   588.86   718.30     8.33   567.57   511.58     0.06
 MEAN   51.22    44.80     6.42   511.49   656.35     8.33   567.57   511.58     0.06
 HUB    45.63    38.84     6.79   420.11   587.91     8.33   567.57   511.58     0.06

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   500.64   278.89   415.76  1179.40     0.42     2.05     1.78     7.43
 MEAN   15.50   505.49   277.35   422.61  1175.34     0.43     2.13     1.86     5.75
 HUB    12.59   539.16   325.49   429.83  1171.44     0.46     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   576.64   511.39   297.75     0.43  5005.90     0.92     0.91
 MEAN  498.14   476.81   220.79     0.41  4300.53     0.92     0.91     0.91     1.51
 HUB   404.68   437.06    79.19     0.37  4099.74     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.49     1.16     9.28   607.00     1.04   586.87   521.23     0.04
 MEAN   10.28     1.13     9.07   603.36     1.04   582.83   519.91     0.04
 HUB    10.22     1.13     8.85   602.32     1.04   578.97   519.54     0.05

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    33.85    35.61    31.50     4.11     0.93     0.43     1.40
 MEAN   33.28    27.58    23.50     4.08     0.93     0.40     1.64
 HUB    37.13    10.44     6.50     3.94     0.93     0.39     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   563.3777   282.4365   487.4669  1171.1572     0.4810    -0.2015     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.3018     8.8109   578.7341   520.1885     0.0463    30.0878    33.0000     2.9122
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   493.1024   112.6003   480.0741  1177.1770     0.4189     0.0442     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500    10.2757     9.1214   584.6973   520.1205   410.5396     0.0407     0.3337

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   477.5614     0.0000   477.5614  1178.3724     0.4053     0.2553     0.5109

Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     9.1915   585.9102   520.1218     0.0000     0.0600     0.0395     0.0998

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.8800    10.2772     1.1327   604.2274    23.0792   257.2005     1.9938

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 143681.203       0.432     467.940  558443.188   0.542688E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3200   Tt4 =   604.2274   T1  =   457.7376

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    911255.31   2967.7683    186.6113      2.4098      0.8583      4.4899      1.3200     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 76.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.819   EfDer =  0.996    SH =  0.474858E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     56.679    3652.585       4.265     457.737       1.000       1.000       0.980
 W Kg/sec =  25.763  Wdry =  56.677  WH2O = 0.003  lbm/sec   H2O =   0.018g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     183.529    3888.203       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 147144.141   44472.469       1.548     831.557     537.207     619.754       1.154

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   424.68    -0.15   424.68     0.41     0.76   699.98
 MEAN    17.06     0.00    -0.02   424.68    -0.15   424.68     0.41     0.67
 HUB     12.51     0.00    -0.02   424.68    -0.15   424.68     0.41     0.57

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.15    50.47     6.68   657.58   782.91     3.80   443.23   448.34     2.95
 MEAN    52.02    47.20     4.82   543.79   690.09     3.80   443.23   448.34     2.95
 HUB     43.21    38.62     4.59   398.75   582.64     3.80   443.23   448.34     2.95

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   656.15   357.88   549.96  1045.52      0.63     7.29     6.52    16.04
 MEAN    18.04   693.09   401.83   564.72  1040.17      0.67     7.43     6.80    12.53
 HUB     15.00   803.05   537.44   596.69  1029.79      0.78     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    657.58   626.32   299.69     0.60  7386.17      0.92     0.91
 MEAN   574.90   590.65   173.07     0.57  7249.87      0.92     0.91     0.91     1.29
 HUB    478.12   599.64    59.31     0.58  8063.37      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.55     1.30     4.27   495.61     1.08   460.98   472.78     1.42
 MEAN     5.52     1.30     4.12   494.91     1.08   456.27   472.45     1.71
 HUB      5.68     1.33     3.82   499.09     1.09   447.21   475.11     2.47

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.05    28.59    24.20     4.39     0.93     0.33     1.80
 MEAN    35.43    17.04    12.70     4.34     0.92     0.28     2.22
 HUB     42.01    -5.68    -9.30     3.62     0.92     0.14     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.996       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   736.6399   401.0471   617.8994  1036.3031     0.7108    -0.0817     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.5692     3.9910   452.8887   473.4436     1.9580    32.9855    35.4000     2.4145

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   584.9489   143.0964   567.1760  1054.5851     0.5547     0.2894     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.5397     4.5061   469.0149   473.1090   554.9116     0.0294     0.4055

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   581.3181     0.0000   581.3181  1054.9506     0.5510     0.3215     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.4983   469.3577   473.0551     0.0000     0.0600     0.0453     0.2842
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8683     5.5156     1.2933   496.5363    38.7996   224.5057     1.7404

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 241210.781       0.558     772.596  636472.625   0.489336E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.758   EfDer =  0.999    SH =  0.501081E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     56.679    3652.585       5.516     496.536       1.000       1.000       0.980
 W Kg/sec =  25.763  Wdry =  56.676  WH2O = 0.003  lbm/sec   H2O =   0.021g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    147.796    3733.215       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 127435.148   44472.422       1.365     590.487     432.622     468.502       1.083

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   517.95    -0.18   517.95     0.49     0.79   669.47
 MEAN    18.08     0.00    -0.02   517.95    -0.18   517.95     0.49     0.73
 HUB     15.21     0.00    -0.02   517.95    -0.18   517.95     0.49     0.67

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.67    46.36     5.31   655.03   835.21     4.70   474.96   473.00     0.86
 MEAN    48.06    42.30     5.76   576.24   774.94     4.70   474.96   473.00     0.86
 HUB     43.12    37.84     5.28   484.82   709.57     4.70   474.96   473.00     0.86

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   587.31   286.89   512.47  1087.58      0.54     2.33     2.04     9.02
 MEAN    18.01   603.40   303.32   521.62  1083.68      0.56     2.40     2.13     7.35
 HUB     15.22   657.63   387.35   531.45  1080.09      0.61     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    650.88   628.59   363.99     0.58  5861.99      0.92     0.91
 MEAN   574.06   587.70   270.75     0.54  5465.92      0.92     0.91     0.91     1.43
 HUB    485.23   540.39    97.89     0.50  5899.27      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.70     1.22     5.51   526.59     1.06   498.85   488.65     0.38
 MEAN     6.62     1.20     5.37   524.56     1.06   495.28   487.68     0.43
 HUB      6.71     1.22     5.24   526.78     1.06   492.00   488.79     0.47

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.24    35.38    31.50     3.88     0.93     0.37     1.40
 MEAN    30.18    27.43    23.50     3.93     0.92     0.36     1.63
 HUB     36.09    10.44     6.50     3.94     0.92     0.38     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   676.3171   304.1667   604.0591  1076.9814     0.6280    -0.1915     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6646     5.1254   489.1952   488.3987     0.5180    26.7270    30.6000     3.8730

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   569.7059   120.7817   556.7554  1088.6808     0.5233     0.1134     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6411     5.5229   499.8766   488.2564   491.5697     0.0281     0.2784

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.8235   597.1281     0.0000   597.1281  1085.8590     0.5499     0.1804     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4030	497.3057	488.2253	0.0000	0.0600	0.0447	0.0213

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8711	6.6194	1.2001	525.9763	29.4408	256.9293	1.9917

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
183082.156	0.432	586.411	572315.000	0.504399E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.994 EfDer = 0.999 SH = 0.508472E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.679	3652.585	6.619	525.976	1.000	1.000	0.980

W Kg/sec = 25.763 Wdry = 56.676 WH2O = 0.003 lbm/sec H2O = 0.025g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
126.750	3627.233	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
110200.273	44472.414	1.470	545.479	371.028	424.468	1.144

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	484.86	-0.17	484.86	0.44	0.73	635.27
MEAN	17.74	0.00	-0.02	484.86	-0.17	484.86	0.44	0.68	
HUB	15.05	0.00	-0.02	484.86	-0.17	484.86	0.44	0.62	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.85	46.36	6.49	639.73	802.84	5.80	507.07	488.17	0.29
MEAN	49.39	43.40	5.99	565.41	744.96	5.80	507.07	488.17	0.29
HUB	44.70	38.84	5.86	479.72	682.19	5.80	507.07	488.17	0.29

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	562.64	286.90	484.00	1120.62	0.50	2.26	1.98	8.75
MEAN	17.51	576.93	302.01	491.57	1117.08	0.52	2.34	2.07	6.78
HUB	14.85	628.02	380.36	499.74	1113.79	0.56	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	631.44	594.11	344.54	0.53	5686.79	0.92	0.91		
MEAN	558.02	554.24	256.00	0.50	5290.19	0.92	0.91	0.91	1.45
HUB	473.34	508.31	92.98	0.46	5650.89	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.92	1.20	6.68	555.12	1.06	529.67	501.36	0.15
MEAN	7.82	1.18	6.54	553.09	1.05	526.33	500.50	0.17
HUB	7.91	1.19	6.39	554.94	1.06	523.23	501.31	0.18

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.66	35.45	31.50	3.95	0.93	0.39	1.40
MEAN	31.57	27.51	23.50	4.01	0.92	0.38	1.62
HUB	37.28	10.54	6.50	4.04	0.92	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	640.4548	303.9962	563.7098	1111.8154	0.5760	-0.1735	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8692	6.3013	521.4108	501.0514	0.1902	28.3370	31.5000	3.1630

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	543.9008	118.6483	530.8019	1121.5776	0.4849	0.1197	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8494	6.6964	530.6030	500.9627	451.3937	0.0247	0.3036

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	555.3640	0.0000	555.3640	1120.4856	0.4956	0.2113	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6327	529.5921	500.9201	0.0000	0.0600	0.0400	0.0724

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8775	7.8288	1.1827	554.3845	28.4093	245.3468	1.9019

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
176720.078	0.443	566.033	546566.938	0.512971E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.372 EfDer = 1.000 SH = 0.519516E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.679	3652.585	7.829	554.384	1.000	1.000	0.980

W Kg/sec = 25.763 Wdry = 56.676 WH2O = 0.003 lbm/sec H2O = 0.029g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
110.026	3533.076	1.381	0.249	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
96520.289	44472.395	1.594	513.330	322.089	395.845	1.229

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	451.27	-0.16	451.27	0.40	0.67	593.80
MEAN	16.97	0.00	-0.02	451.27	-0.16	451.27	0.40	0.62	
HUB	14.32	0.00	-0.02	451.27	-0.16	451.27	0.40	0.57	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.69	46.36	7.33	613.91	762.05	7.02	538.02	500.89	0.12
MEAN	50.17	43.80	6.37	540.94	704.57	7.02	538.02	500.89	0.12
HUB	45.34	37.84	7.50	456.45	641.97	7.02	538.02	500.89	0.12

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	532.09	279.34	452.87	1150.81	0.46	2.16	1.89	8.34
MEAN	16.57	542.99	289.09	459.64	1147.29	0.47	2.24	1.97	6.35
HUB	13.89	587.37	356.39	466.90	1143.95	0.51	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	601.80	555.94	322.46	0.48	5276.94	0.92	0.91		
MEAN	528.29	518.15	239.20	0.45	4793.90	0.92	0.91	0.91	1.48
HUB	442.74	474.82	86.35	0.42	4952.46	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.17	1.17	7.94	581.42	1.05	558.67	511.88	0.07
MEAN	9.04	1.15	7.77	578.95	1.04	555.25	510.92	0.08
HUB	9.08	1.16	7.61	579.76	1.05	552.03	511.25	0.09

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.67	35.45	31.50	3.95	0.93	0.40	1.40
MEAN	32.17	27.49	23.50	3.99	0.93	0.39	1.62
HUB	37.35	10.48	6.50	3.98	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	586.5303	290.7112	509.4162	1144.2944	0.5126	-0.1199	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.0851	7.6112	552.3975	511.3344	0.0842	29.7123	32.4000	2.6877

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	504.4359	113.1302	491.5864	1151.7238	0.4380	0.1455	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.0699	7.9634	559.5945	511.2797	432.2457	0.0215	0.3257

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	500.3070	0.0000	500.3070	1152.0438	0.4343	0.2367	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9601	559.9294	511.2276	0.0000	0.0600	0.0391	0.1430

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8791	9.0465	1.1555	580.0416	25.6588	247.7675	1.9207

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
159670.438	0.441	511.423	540198.438	0.526369E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.675 EfDer = 1.000 SH = 0.538471E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.679	3652.585	9.046	580.041	1.000	1.000	0.980

W Kg/sec = 25.763 Wdry = 56.676 WH2O = 0.003 lbm/sec H2O = 0.034g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
97.394	3454.052	1.381	0.249	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
85781.719	44472.359	1.788	509.668	285.127	384.739	1.349

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	403.94	-0.14	403.94	0.35	0.61	552.19
MEAN	15.91	0.00	-0.02	403.94	-0.14	403.94	0.35	0.56	
HUB	13.07	0.00	-0.02	403.94	-0.14	403.94	0.35	0.50	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.33	47.36	7.97	583.95	710.16	8.33	566.93	511.21	0.06
MEAN	51.47	44.80	6.67	507.22	648.53	8.33	566.93	511.21	0.06
HUB	45.89	38.84	7.05	416.60	580.38	8.33	566.93	511.21	0.06

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	495.04	279.18	408.80	1178.55	0.42	2.05	1.78	7.43
MEAN	15.50	499.37	277.01	415.49	1174.51	0.43	2.13	1.86	5.75
HUB	12.59	532.19	323.53	422.56	1170.62	0.45	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	571.83	502.76	292.65	0.43	5011.13	0.92	0.91		
MEAN	493.98	468.73	216.97	0.40	4295.26	0.92	0.91	0.91	1.52
HUB	401.30	429.65	77.78	0.37	4075.04	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.45	1.15	9.27	605.71	1.04	586.02	520.84	0.04
MEAN	10.24	1.13	9.06	602.04	1.04	582.01	519.51	0.04
HUB	10.17	1.12	8.84	600.91	1.04	578.16	519.10	0.05

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	34.33	35.60	31.50	4.10	0.93	0.43	1.40
MEAN	33.69	27.57	23.50	4.07	0.93	0.41	1.64
HUB	37.44	10.43	6.50	3.93	0.93	0.40	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	555.7930	282.0930	478.8835	1170.4902	0.4748	-0.1988	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.2611	8.8106	578.0728	519.7755	0.0476	30.5008	33.0000	2.4992

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   484.2798   110.5857   471.4846  1176.5239     0.4116     0.0556     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.2372     9.1240   584.0468   519.7122   410.5396     0.0394     0.3395

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   469.1588     0.0000   469.1588  1177.6660     0.3984     0.2619     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.1905   585.2060   519.7121     0.0000     0.0600     0.0387     0.1097

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8813    10.2381     1.1317   602.8844    22.8446   254.7601     1.9749

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 142219.531       0.435     455.528  548861.125   0.548905E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3171   Tt4 =   602.8844   T1  =   457.7375

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    902903.00   2891.9919    183.5287      2.4007      0.8620      4.8189      1.3171     37.3740
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50µm, ISA +36R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.844   EfDer =  0.984    SH =  0.942187E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     61.722    3973.534       4.265     477.919       1.000       1.000       0.980
  W Kg/sec =  28.056  Wdry =  61.716  WH2O = 0.006  lbm/sec   H2O =   0.033g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     204.221    4139.589       1.381       0.248      53.351      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 171771.500   48428.578       1.391     831.557     597.792     619.754       1.037

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   495.76    -0.17   495.76     0.48     0.84   745.23
 MEAN    17.06     0.00    -0.02   495.76    -0.17   495.76     0.48     0.74
 HUB     12.51     0.00    -0.02   495.76    -0.17   495.76     0.48     0.63

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.28     50.47     4.81   715.36   870.49      3.66   458.15   460.91     2.71
 MEAN    50.04     47.20     2.84   591.57   771.97      3.66   458.15   460.91     2.71
 HUB     41.20     38.62     2.58   433.79   658.86      3.66   458.15   460.91     2.71

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   743.60   360.71   650.26  1061.27     0.70     7.29     6.52    16.04
 MEAN    18.04   789.70   420.32   668.55  1055.77     0.75     7.43     6.80    12.53
 HUB     15.00   933.68   592.64   721.48  1041.45     0.90     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    715.36   740.68   354.65     0.70  7444.88     0.92     0.90
 MEAN   625.41   699.30   205.09     0.66  7583.85     0.92     0.90     0.90     1.21
 HUB    520.13   725.11    72.50     0.70  8891.67     0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.60     1.31     4.05   519.44     1.09   474.97   483.75     1.42
 MEAN     5.63     1.32     3.90   520.22     1.09   470.06   484.30     1.70
 HUB      5.89     1.38     3.52   527.51     1.10   457.40   488.59     2.75

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.02    28.61    24.20     4.41     0.93     0.26     1.80
 MEAN    32.16    17.05    12.70     4.35     0.91     0.22     2.22
 HUB     39.40    -5.74    -9.30     3.56     0.91     0.06     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.984       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   854.1495   419.5058   744.0338  1048.6185     0.8145    -0.1082     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.6899     3.6957   463.7132   485.6089     2.1610    29.4154    35.4000     5.9846

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   695.9929   170.2611   674.8461  1070.6743     0.6501     0.2272     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.6287     4.2511   483.4336   484.7977   554.9116     0.0424     0.3580

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   698.3423     0.0000   698.3423  1070.3605     0.6524     0.2518     1.3089
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.1979	483.1751	484.6455	0.0000	0.0600	0.0740	0.1990

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8218	5.5692	1.3059	522.3923	44.4744	238.1873	1.8464

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
276513.406	0.540	964.474	688665.250	0.972625E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.450 EfDer = 0.989 SH = 0.100067E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
61.722	3973.534	5.569	522.392	1.000	1.000	0.980

W Kg/sec = 28.056 Wdry = 61.716 WH2O = 0.006 lbm/sec H2O = 0.040g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
163.496	3959.467	1.381	0.248	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
150299.734	48428.461	1.234	590.487	478.593	468.502	0.979

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	610.88	-0.21	610.88	0.57	0.87	710.04
MEAN	18.08	0.00	-0.02	610.88	-0.21	610.88	0.57	0.81	
HUB	15.21	0.00	-0.02	610.88	-0.21	610.88	0.57	0.75	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.40	46.36	3.04	712.58	938.75	4.49	492.38	484.49	0.79
MEAN	45.75	42.30	3.45	626.87	875.45	4.49	492.38	484.49	0.79
HUB	40.82	37.84	2.98	527.42	807.20	4.49	492.38	484.49	0.79

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	662.03	280.38	599.73	1109.42	0.60	2.33	2.04	9.02
MEAN	18.01	682.27	306.53	609.53	1105.86	0.62	2.40	2.13	7.35
HUB	15.22	744.85	412.22	620.38	1102.66	0.68	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	708.08	736.61	427.70	0.66	5729.66	0.92	0.90		
MEAN	624.51	687.49	317.98	0.62	5524.36	0.92	0.90	0.90	1.37
HUB	527.87	631.07	115.65	0.57	6278.35	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.77	1.22	5.34	554.34	1.06	519.10	498.54	0.34
MEAN	6.72	1.21	5.22	553.20	1.06	515.77	498.09	0.38
HUB	6.89	1.24	5.10	557.40	1.07	512.79	499.90	0.41

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.06	35.49	31.50	3.99	0.93	0.32	1.40
MEAN	26.70	27.55	23.50	4.05	0.92	0.32	1.63
HUB	33.60	10.56	6.50	4.06	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.989	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	782.9358	307.3885	720.0700	1094.9746	0.7150	-0.2381	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7795	4.8403	505.7002	498.9572	0.5107	23.1170	30.6000	7.4830

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	677.0516	143.5397	661.6609	1108.3602	0.6109	0.0189	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7286	5.2457	518.1257	498.6407	491.5697	0.0422	0.2194

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	721.3776	0.0000	721.3776	1102.9967	0.6540	0.0956	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0256	513.1467	498.5623	0.0000	0.0600	0.0755	-0.1205

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8223	6.6760	1.1987	554.9811	32.5896	281.2249	2.1800

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
202709.453	0.404	707.047	623711.750	0.100931E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.821 EfDer = 0.991 SH = 0.101950E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
61.722	3973.534	6.676	554.981	1.000	1.000	0.980

W Kg/sec = 28.056 Wdry = 61.716 WH2O = 0.006 lbm/sec H2O = 0.047g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
140.581	3841.458	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
129400.414	48428.430	1.325	545.479	411.535	424.468	1.031

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	569.34	-0.20	569.34	0.51	0.80	672.79
MEAN	17.74	0.00	-0.02	569.34	-0.20	569.34	0.51	0.75	
HUB	15.05	0.00	-0.02	569.34	-0.20	569.34	0.51	0.69	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.72	46.36	4.36	695.94	899.30	5.61	528.93	498.40	0.26
MEAN	47.22	43.40	3.82	615.09	838.29	5.61	528.93	498.40	0.26
HUB	42.52	38.84	3.68	521.87	772.46	5.61	528.93	498.40	0.26

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	631.81	283.50	564.64	1146.27	0.55	2.26	1.98	8.75
MEAN	17.51	650.11	307.34	572.87	1142.95	0.57	2.34	2.07	6.78
HUB	14.85	709.33	405.50	581.99	1139.94	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	686.92	693.95	403.42	0.61	5620.09	0.92	0.91		
MEAN	607.05	646.53	299.71	0.57	5384.02	0.92	0.91	0.91	1.40
HUB	514.93	592.19	109.43	0.52	6024.70	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.00	1.20	6.52	586.31	1.06	554.22	510.56	0.13
MEAN	7.94	1.19	6.39	584.99	1.05	551.02	510.09	0.14
HUB	8.10	1.21	6.26	588.57	1.06	548.12	511.45	0.15

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.66	35.55	31.50	4.05	0.93	0.34	1.40
MEAN	28.21	27.62	23.50	4.12	0.92	0.34	1.62
HUB	34.87	10.65	6.50	4.15	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.991	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	733.7064	309.3612	665.2975	1134.9271	0.6465	-0.2060	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9984	6.0592	543.3623	510.7206	0.1747	24.9383	31.5000	6.5617

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	641.8356	140.0121	626.3782	1145.4963	0.5603	0.0333	2.3726

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.9574     6.4465   553.5154   510.5378   451.3937     0.0353     0.2527

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   659.5397     0.0000   659.5397  1143.5521     0.5767     0.1426     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3357   551.6683   510.4440     0.0000     0.0600     0.0608    -0.0350

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8441     7.9161     1.1858   586.6224    31.6423   266.6945     2.0674

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 196899.719       0.417     686.783  589501.813   0.102831E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 4.409   EfDer =  0.995    SH =  0.104054E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     61.722    3973.534       7.916     586.622       1.000       1.000       0.980
 W Kg/sec =  28.056  Wdry =  61.716  WH2O = 0.006  lbm/sec   H2O =   0.055g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    121.891    3736.421       1.381       0.249      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 112538.602   48428.391       1.439     513.330     356.845     395.845       1.109

ROTOR LEADING EDGE CONDITIONS, STAGE   4

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    19.26     0.00    -0.02   526.16    -0.18   526.16     0.45     0.74   627.98
 MEAN   16.97     0.00    -0.02   526.16    -0.18   526.16     0.45     0.68
 HUB    14.32     0.00    -0.02   526.16    -0.18   526.16     0.45     0.63

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    51.78    46.36     5.42   667.85   850.36     6.88   564.38   510.37     0.11
 MEAN   48.21    43.80     4.41   588.47   789.53     6.88   564.38   510.37     0.11
 HUB    43.35    37.84     5.51   496.56   723.59     6.88   564.38   510.37     0.11

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    18.88   594.75   279.74   524.86  1180.22      0.50     2.16     1.89     8.34
 MEAN   16.57   609.51   296.47   532.55  1176.72      0.52     2.24     1.97     6.35
 HUB    13.89   661.46   380.71   540.91  1173.47      0.56     2.26     2.10     4.19

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   654.68   645.02   374.94     0.55  5284.95      0.92     0.91
 MEAN  574.71   600.85   278.24     0.51  4916.75      0.92     0.91     0.91     1.42
 HUB   481.64   550.25   100.93     0.47  5290.69      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     9.31     1.18     7.84   616.07     1.05   587.65   520.78     0.06
 MEAN    9.21     1.16     7.68   614.02     1.05   584.17   520.09     0.07
 HUB     9.31     1.18     7.52   616.10     1.05   580.95   520.82     0.07

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    28.06    35.54    31.50     4.04     0.93     0.36     1.40
 MEAN   29.10    27.59    23.50     4.09     0.92     0.35     1.62
 HUB    35.14    10.57     6.50     4.07     0.92     0.37     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.995       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   664.4277   298.1385   593.7825  1172.3848     0.5667    -0.1373     2.1803

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.2582    7.4655   579.9369   520.5452     0.0737    26.6612    32.4000     5.7388
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   588.7303   132.0350   573.7335  1180.0646     0.4989     0.0745     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.2281     7.8019   587.5552   520.4386   432.2457     0.0290     0.2828

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   584.0569     0.0000   584.0569  1180.4778     0.4948     0.1854     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.7979   587.9987   520.3650     0.0000     0.0600     0.0477     0.0719

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8616     9.1983     1.1620   615.3939    28.7731   266.9841     2.0696

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 179140.578       0.418     624.839  577230.938   0.105151E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.014   EfDer =  0.997    SH =  0.107281E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     61.722    3973.534       9.198     615.393       1.000       1.000       0.980
 W Kg/sec =  28.056  Wdry =  61.716  WH2O = 0.007  lbm/sec   H2O =   0.064g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    107.441    3648.031       1.381       0.249      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  99005.203   48428.328       1.620     509.668     314.569     384.739       1.223

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   466.21    -0.16   466.21     0.39     0.66   583.20
 MEAN    15.91     0.00    -0.02   466.21    -0.16   466.21     0.39     0.61
 HUB     13.07     0.00    -0.02   466.21    -0.16   466.21     0.39     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.73    47.36     6.37   635.26   788.10     8.29   597.94   520.33     0.05
 MEAN    49.81    44.80     5.01   551.79   722.50     8.29   597.94   520.33     0.05
 HUB     44.20    38.84     5.36   453.21   650.31     8.29   597.94   520.33     0.05

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   549.00   285.42   468.97  1211.86      0.45     2.05     1.78     7.43
 MEAN    15.50   556.96   287.51   477.01  1207.53      0.46     2.13     1.86     5.75
 HUB     12.59   596.52   346.58   485.52  1203.43      0.50     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    622.08   577.30   336.66     0.48  5123.35      0.92     0.91
 MEAN   537.39   538.50   249.88     0.45  4458.20      0.92     0.91     0.91     1.47
 HUB    436.57   493.79    89.99     0.41  4365.48      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.69     1.16     9.30   643.92     1.05   619.72   529.73     0.03
 MEAN    10.49     1.14     9.08   640.22     1.04   615.31   528.55     0.04
 HUB     10.46     1.14     8.86   639.70     1.04   611.13   528.39     0.04

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.32    35.67    31.50     4.17     0.93     0.40     1.40
 MEAN    31.08    27.65    23.50     4.15     0.92     0.37     1.64
 HUB     35.52    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   625.9087   292.7776   553.2115  1202.0842     0.5207    -0.2179     2.0437
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    Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
   10.5159     8.7620   609.8335   528.8409     0.0408    27.8893    33.0000     5.1107

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   560.7544   128.0487   545.9387  1208.1915     0.4641    -0.0209     2.1315

   BlockageTh  PtTh      PsTh       TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4709     9.0511   616.0385   528.7194   410.5396     0.0507     0.3035

    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   541.8454     0.0000   541.8454  1209.8020     0.4479     0.2197     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.1474   617.7146   528.7327     0.0000     0.0600     0.0454     0.0449

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
    0.8692    10.4786     1.1392   641.2789    25.8868   270.9525     2.1004

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 161270.422       0.417     562.509  581088.438   0.108952E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3418   Tt4 =   641.2789   T1  =   477.9185

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
   1016533.63   3545.6521    204.2212      2.4571      0.8233      2.8439      1.3418     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 84.0%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 3.953   EfDer =  0.992    SH =  0.949700E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     58.025    3823.067       4.265     477.918       1.000       1.000       0.980
  W Kg/sec =  26.375  Wdry =  58.019  WH2O = 0.006  lbm/sec   H2O =   0.033g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     191.987   3982.834       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 158869.984   45527.348       1.480     831.557     561.982     619.754       1.103

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   458.52    -0.16   458.52     0.44     0.79   717.01
 MEAN    17.06     0.00    -0.02   458.52    -0.16   458.52     0.44     0.70
 HUB     12.51     0.00    -0.02   458.52    -0.16   458.52     0.44     0.59

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.33     50.47     5.86   688.27   827.15     3.74   461.01   460.85     2.44
 MEAN    51.15     47.20     3.95   569.17   731.01     3.74   461.01   460.85     2.44
 HUB     42.32     38.62     3.70   417.37   620.14     3.74   461.01   460.85     2.44

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   698.27   363.07   596.46  1065.66      0.66     7.29     6.52    16.04
 MEAN    18.04   739.34   413.82   612.68  1060.20      0.70     7.43     6.80    12.53
 HUB     15.00   862.71   565.37   651.63  1048.46      0.82     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    688.27   679.35   325.20     0.64  7493.41      0.92     0.91
 MEAN   601.73   640.85   187.91     0.60  7466.38      0.92     0.91     0.91     1.26
 HUB    500.44   654.86    64.93     0.62  8482.50      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.57     1.31     4.19   518.13     1.08   478.92   483.03     1.25
 MEAN     5.56     1.30     4.03   517.99     1.08   474.02   483.08     1.49
 HUB      5.76     1.35     3.71   523.44     1.10   463.58   486.23     2.19

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.33    28.60    24.20     4.40     0.93     0.30     1.80
 MEAN    34.04    17.05    12.70     4.35     0.92     0.25     2.22
 HUB     40.95    -5.69    -9.30     3.61     0.92     0.11     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.992       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   790.4847   413.0173   674.0051  1055.2396     0.7491    -0.0909     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.6129     3.8839   469.5964   484.1318     1.7569    31.4992    35.4000     3.9008

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   635.4916   155.4606   616.1830  1075.0188     0.5911     0.2637     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5740     4.4125   487.3732   483.5727   554.9116     0.0335     0.3860

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   633.0502     0.0000   633.0502  1075.2712     0.5887     0.2947     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.3935   487.6259   483.4799     0.0000     0.0600     0.0543     0.2522
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8535     5.5397     1.2990   519.8514    41.9340   230.3247     1.7855

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 260731.813       0.550     854.947  636940.625   0.984502E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 4.798   EfDer =  0.996    SH =  0.101721E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     58.025    3823.067       5.540     519.851       1.000       1.000       0.980
 W Kg/sec =  26.375  Wdry =  58.019  WH2O = 0.006  lbm/sec   H2O =   0.041g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    154.143    3818.831       1.381       0.248      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 137947.844   45527.230       1.309     590.487     451.219     468.502       1.038

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   560.68    -0.19   560.68     0.52     0.82   684.82
 MEAN    18.08     0.00    -0.02   560.68    -0.19   560.68     0.52     0.76
 HUB     15.21     0.00    -0.02   560.68    -0.19   560.68     0.52     0.70

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     50.73    46.36     4.37   685.60   885.82     4.62   494.57   483.39     0.76
 MEAN    47.10    42.30     4.80   603.14   823.63     4.62   494.57   483.39     0.76
 HUB     42.16    37.84     4.32   507.44   756.35     4.62   494.57   483.39     0.76

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   623.50   287.79   553.11  1110.53      0.56     2.33     2.04     9.02
 MEAN    18.01   641.58   308.22   562.70  1106.69      0.58     2.40     2.13     7.35
 HUB     15.22   699.92   401.83   573.07  1103.20      0.63     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    681.26   678.79   393.47     0.61  5880.63      0.92     0.91
 MEAN   600.86   634.25   292.64     0.57  5554.46      0.92     0.91     0.91     1.40
 HUB    507.88   582.80   106.04     0.53  6120.06      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.73     1.22     5.45   551.40     1.06   520.14   497.51     0.34
 MEAN     6.66     1.20     5.32   549.65     1.06   516.55   496.79     0.38
 HUB      6.79     1.22     5.19   552.69     1.06   513.30   498.14     0.42

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     27.49    35.43    31.50     3.93     0.93     0.35     1.40
 MEAN    28.71    27.48    23.50     3.98     0.92     0.34     1.63
 HUB     35.04    10.48     6.50     3.98     0.92     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.996       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   725.1088   309.0821   655.9352  1098.5129     0.6601    -0.2079     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7127     5.0276   508.9768   497.5442     0.4770    25.2302    30.6000     5.3698

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   617.9764   131.0154   603.9286  1110.9337     0.5563     0.0767     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6807     5.4281   520.5430   497.3143   491.5697     0.0328     0.2554

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   650.7952     0.0000   650.7952  1107.3346     0.5877     0.1488     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.2783	517.1990	497.2696	0.0000	0.0600	0.0546	-0.0298

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8562	6.6500	1.2004	551.2459	31.3953	266.5764	2.0665

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
195284.484	0.421	640.343	574286.000	0.102703E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.108 EfDer = 0.997 SH = 0.103893E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.025	3823.067	6.650	551.246	1.000	1.000	0.980

W Kg/sec = 26.375 Wdry = 58.019 WH2O = 0.006 lbm/sec H2O = 0.049g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
132.228	3708.493	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
119004.453	45527.191	1.409	545.479	387.085	424.468	1.097

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	523.60	-0.18	523.60	0.47	0.76	649.50
MEAN	17.74	0.00	-0.02	523.60	-0.18	523.60	0.47	0.71	
HUB	15.05	0.00	-0.02	523.60	-0.18	523.60	0.47	0.65	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.98	46.36	5.62	669.59	850.14	5.74	529.21	497.16	0.27
MEAN	48.51	43.40	5.11	591.80	790.31	5.74	529.21	497.16	0.27
HUB	43.81	38.84	4.97	502.11	725.57	5.74	529.21	497.16	0.27

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	596.19	289.28	521.31	1145.44	0.52	2.26	1.98	8.75
MEAN	17.51	612.35	307.94	529.29	1141.92	0.54	2.34	2.07	6.78
HUB	14.85	667.36	394.94	537.96	1138.68	0.59	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	660.91	640.21	371.63	0.56	5734.24	0.92	0.91		
MEAN	584.06	596.99	276.13	0.52	5394.09	0.92	0.91	0.91	1.43
HUB	495.43	547.26	100.49	0.48	5867.58	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.96	1.20	6.63	582.00	1.06	553.43	509.34	0.14
MEAN	7.88	1.18	6.49	580.18	1.05	550.04	508.67	0.15
HUB	7.99	1.20	6.35	582.72	1.06	546.92	509.66	0.17

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	29.03	35.48	31.50	3.98	0.93	0.37	1.40
MEAN	30.19	27.55	23.50	4.05	0.92	0.36	1.62
HUB	36.28	10.58	6.50	4.08	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.997	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	683.8542	309.9561	609.5767	1135.6438	0.6022	-0.1853	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9299	6.2247	544.0485	509.2320	0.1791	26.9523	31.5000	4.5477

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	588.0618	128.2817	573.8994	1145.8250	0.5132	0.0862	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.9036	6.6184	553.8384	509.0953	451.3937	0.0281	0.2836

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	601.4011	0.0000	601.4011	1144.4783	0.5255	0.1864	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.5426	552.5668	509.0401	0.0000	0.0600	0.0454	0.0339

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8687	7.8786	1.1848	581.6293	30.3846	253.6723	1.9665

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
189073.828	0.433	619.978	546416.000	0.104948E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 5.586 EfDer = 0.999 SH = 0.106620E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.025	3823.067	7.879	581.629	1.000	1.000	0.980

W Kg/sec = 26.375 Wdry = 58.019 WH2O = 0.006 lbm/sec H2O = 0.057g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
114.643	3610.330	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
103876.477	45527.141	1.529	513.330	335.626	395.845	1.179

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	485.66	-0.17	485.66	0.42	0.70	606.79
MEAN	16.97	0.00	-0.02	485.66	-0.17	485.66	0.42	0.65	
HUB	14.32	0.00	-0.02	485.66	-0.17	485.66	0.42	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.92	46.36	6.56	642.56	805.58	6.99	562.68	508.99	0.12
MEAN	49.39	43.80	5.59	566.19	746.07	6.99	562.68	508.99	0.12
HUB	44.54	37.84	6.70	477.75	681.37	6.99	562.68	508.99	0.12

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	562.70	283.25	486.21	1177.43	0.48	2.16	1.89	8.34
MEAN	16.57	575.29	295.76	493.45	1173.86	0.49	2.24	1.97	6.35
HUB	13.89	623.23	370.38	501.24	1170.50	0.53	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	629.89	597.12	346.63	0.51	5351.05	0.92	0.91		
MEAN	552.95	556.45	257.19	0.47	4904.74	0.92	0.91	0.91	1.45
HUB	463.41	509.80	93.03	0.44	5146.95	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.24	1.17	7.92	610.31	1.05	584.88	519.34	0.07
MEAN	9.12	1.16	7.76	607.92	1.05	581.33	518.52	0.08
HUB	9.19	1.17	7.59	609.22	1.05	578.01	518.99	0.08

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.22	35.49	31.50	3.99	0.93	0.38	1.40
MEAN	30.94	27.53	23.50	4.03	0.92	0.38	1.62
HUB	36.46	10.51	6.50	4.01	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	623.5355	297.4242	548.0286	1170.3552	0.5328	-0.1263	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1713	7.5778	577.9235	518.9315	0.0811	28.4894	32.4000	3.9106

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	542.8514	121.7457	529.0233	1177.9845	0.4608	0.1179	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.1515	7.9263	585.4822	518.8508	432.2457	0.0239	0.3084

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	538.4454	0.0000	538.4454	1178.3405	0.4570	0.2165	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9229	585.8673	518.7881	0.0000	0.0600	0.0418	0.1155

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8739	9.1258	1.1583	609.1511	27.5234	255.1529	1.9779

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
171355.344	0.432	561.879	538221.375	0.107969E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.007 EfDer = 0.999 SH = 0.110580E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.025	3823.067	9.126	609.151	1.000	1.000	0.980

W Kg/sec = 26.375 Wdry = 58.018 WH2O = 0.006 lbm/sec H2O = 0.067g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
101.289	3527.829	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
91951.844	45527.070	1.719	509.668	296.554	384.739	1.297

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	433.00	-0.15	433.00	0.36	0.63	563.98
MEAN	15.91	0.00	-0.02	433.00	-0.15	433.00	0.36	0.58	
HUB	13.07	0.00	-0.02	433.00	-0.15	433.00	0.36	0.52	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.69	47.36	7.33	611.20	749.16	8.33	594.10	518.76	0.06
MEAN	50.81	44.80	6.01	530.90	685.20	8.33	594.10	518.76	0.06
HUB	45.21	38.84	6.37	436.05	614.62	8.33	594.10	518.76	0.06

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	522.00	285.23	437.18	1206.95	0.43	2.05	1.78	7.43
MEAN	15.50	527.80	284.64	444.47	1202.75	0.44	2.13	1.86	5.75
HUB	12.59	563.67	336.55	452.17	1198.72	0.47	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	598.52	537.84	313.29	0.45	5119.77	0.92	0.91		
MEAN	517.04	501.56	232.40	0.42	4413.66	0.92	0.91	0.91	1.50
HUB	420.03	459.81	83.48	0.38	4239.15	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.56	1.16	9.31	636.58	1.05	614.70	527.99	0.04
MEAN	10.36	1.13	9.09	632.80	1.04	610.43	526.76	0.04
HUB	10.31	1.13	8.87	631.86	1.04	606.35	526.46	0.05

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.12	35.63	31.50	4.13	0.93	0.42	1.40
MEAN	32.64	27.60	23.50	4.10	0.93	0.39	1.64
HUB	36.66	10.46	6.50	3.96	0.93	0.39	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	589.5882	289.8629	513.4138	1198.1625	0.4921	-0.2060	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3827	8.8175	605.8418	527.0284	0.0469	29.4482	33.0000	3.5518

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   519.5662   118.6434   505.8387  1204.3143     0.4314     0.0261     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.3521     9.1243   612.0759   526.9392   410.5396     0.0431     0.3249

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   502.9091     0.0000   502.9091  1205.6290     0.4171     0.2451     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.2011   613.4451   526.9426     0.0000     0.0600     0.0409     0.0843

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8776    10.3551     1.1347   633.7456    24.5963   261.0726     2.0238

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 153218.734       0.428     502.409  545031.063   0.112628E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3261   Tt4 =   633.7456   T1  =   477.9182

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    969664.25   3179.5566    191.9870      2.4281      0.8503      3.9529      1.3261     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 79.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.382   EfDer =  0.994    SH =  0.952386E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     56.729    3775.949       4.265     477.918       1.000       1.000       0.980
 W Kg/sec =  25.786  Wdry =  56.724  WH2O = 0.005  lbm/sec   H2O =   0.034g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    187.702    3933.747       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 154519.922   44511.102       1.513     831.557     549.438     619.754       1.128

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   445.97    -0.15   445.97     0.43     0.78   708.17
 MEAN    17.06     0.00    -0.02   445.97    -0.15   445.97     0.43     0.69
 HUB     12.51     0.00    -0.02   445.97    -0.15   445.97     0.43     0.58

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.74    50.47     6.27   679.79   813.15     3.77   461.92   460.84     2.37
 MEAN    51.58    47.20     4.38   562.16   717.69     3.77   461.92   460.84     2.37
 HUB     42.76    38.62     4.14   412.22   607.40     3.77   461.92   460.84     2.37

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   683.86   364.33   578.73  1067.04      0.64     7.29     6.52    16.04
 MEAN    18.04   723.24   412.08   594.36  1061.58      0.68     7.43     6.80    12.53
 HUB     15.00   840.80   556.95   629.89  1050.46      0.80     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    679.79   659.12   315.45     0.62  7519.38      0.92     0.91
 MEAN   594.31   621.67   182.24     0.59  7434.84      0.92     0.91     0.91     1.27
 HUB    494.27   633.00    62.67     0.60  8356.10      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.56     1.30     4.23   517.77     1.08   480.16   482.83     1.20
 MEAN     5.54     1.30     4.08   517.32     1.08   475.26   482.73     1.43
 HUB      5.72     1.34     3.77   522.21     1.09   465.35   485.54     2.06

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.19    28.59    24.20     4.39     0.93     0.31     1.80
 MEAN    34.73    17.05    12.70     4.35     0.92     0.27     2.22
 HUB     41.48    -5.68    -9.30     3.62     0.92     0.12     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   770.8202   411.2758   651.9325  1057.1671     0.7291    -0.0860     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.5900     3.9402   471.3159   483.7073     1.6570    32.2460    35.4000     3.1540

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   616.0010   150.6927   597.2847  1076.3514     0.5723     0.2767     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5564     4.4616   488.5849   483.2062   554.9116     0.0313     0.3958

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   612.7910     0.0000   612.7910  1076.6787     0.5691     0.3085     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4491   488.9054   483.1282     0.0000     0.0600     0.0493     0.2688
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8617     5.5278     1.2962   519.1010    41.1837   227.4061     1.7628

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 256070.281       0.554     820.919  619500.313   0.988882E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.281   EfDer =  0.998    SH =  0.102348E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     56.729    3775.949       5.528     519.101       1.000       1.000       0.980
 W Kg/sec =  25.786  Wdry =  56.724  WH2O = 0.006  lbm/sec   H2O =   0.042g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    150.918    3774.491       1.381       0.248      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 133964.016   44510.980       1.337     590.487     441.778     468.502       1.060

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   544.49    -0.19   544.49     0.50     0.80   676.87
 MEAN    18.08     0.00    -0.02   544.49    -0.19   544.49     0.50     0.74
 HUB     15.21     0.00    -0.02   544.49    -0.19   544.49     0.50     0.68

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.21     46.36     4.85   677.15   869.05     4.66   495.26   483.05     0.75
 MEAN    47.58     42.30     5.28   595.70   807.19     4.66   495.26   483.05     0.75
 HUB     42.64     37.84     4.80   501.19   740.17     4.66   495.26   483.05     0.75

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   611.37   290.49   537.95  1110.91      0.55     2.33     2.04     9.02
 MEAN    18.01   628.63   309.03   547.43  1106.99      0.57     2.40     2.13     7.35
 HUB     15.22   685.49   398.67   557.63  1103.41      0.62     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    672.87   660.00   382.38     0.59  5935.64      0.92     0.91
 MEAN   593.45   616.91   284.42     0.56  5569.06      0.92     0.91     0.91     1.41
 HUB    501.62   567.06   102.95     0.51  6071.77      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.72     1.22     5.48   550.55     1.06   520.50   497.19     0.34
 MEAN     6.64     1.20     5.35   548.61     1.06   516.84   496.40     0.38
 HUB      6.75     1.22     5.22   551.27     1.06   513.49   497.58     0.42

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.37    35.41    31.50     3.91     0.93     0.36     1.40
 MEAN    29.45    27.45    23.50     3.95     0.92     0.35     1.63
 HUB     35.56    10.46     6.50     3.96     0.92     0.37     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   707.3780   309.9005   635.8815  1099.5281     0.6433    -0.1993     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6885     5.0798   509.9189   497.1136     0.4684    25.9825    30.6000     4.6175

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   599.4171   127.0807   585.7913  1111.6958     0.5392     0.0955     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6612     5.4788   521.2598   496.9047   491.5697     0.0302     0.2671

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   629.5977     0.0000   629.5977  1108.4900     0.5680     0.1651     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3454	518.2811	496.8684	0.0000	0.0600	0.0492	-0.0031

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8644	6.6355	1.2004	550.1459	31.0457	261.6479	2.0283

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
193111.453	0.427	619.084	557907.625	0.103392E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.555 EfDer = 0.999 SH = 0.104681E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.729	3775.949	6.636	550.146	1.000	1.000	0.980

W Kg/sec = 25.786 Wdry = 56.724 WH2O = 0.006 lbm/sec H2O = 0.049g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
129.429	3666.446	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
115699.609	44510.938	1.440	545.479	378.892	424.468	1.120

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	509.06	-0.18	509.06	0.45	0.75	642.14
MEAN	17.74	0.00	-0.02	509.06	-0.18	509.06	0.45	0.69	
HUB	15.05	0.00	-0.02	509.06	-0.18	509.06	0.45	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.42	46.36	6.06	661.33	834.70	5.77	529.32	496.77	0.27
MEAN	48.96	43.40	5.56	584.51	775.24	5.77	529.32	496.77	0.27
HUB	44.26	38.84	5.42	495.92	710.81	5.77	529.32	496.77	0.27

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	585.13	291.24	507.50	1145.21	0.51	2.26	1.98	8.75
MEAN	17.51	600.51	308.24	515.36	1141.64	0.53	2.34	2.07	6.78
HUB	14.85	654.11	391.69	523.87	1138.33	0.57	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	652.77	623.10	361.53	0.54	5772.97	0.92	0.91		
MEAN	576.86	581.17	268.63	0.51	5399.32	0.92	0.91	0.91	1.44
HUB	489.33	532.89	97.64	0.47	5819.23	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.94	1.20	6.66	580.73	1.06	553.21	508.95	0.14
MEAN	7.85	1.18	6.52	578.75	1.05	549.76	508.21	0.16
HUB	7.95	1.20	6.37	580.97	1.06	546.58	509.09	0.17

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	29.85	35.46	31.50	3.96	0.93	0.38	1.40
MEAN	30.88	27.53	23.50	4.03	0.92	0.37	1.62
HUB	36.79	10.56	6.50	4.06	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	668.5364	310.2620	592.1810	1135.8341	0.5886	-0.1791	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9002	6.2667	544.2309	508.7596	0.1807	27.6514	31.5000	3.8486

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	571.3192	124.6294	557.5599	1145.9039	0.4986	0.1034	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8775	6.6612	553.9162	508.6342	451.3937	0.0263	0.2939

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	583.6649	0.0000	583.6649	1144.6910	0.5099	0.2000	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.5934	552.7736	508.5872	0.0000	0.0600	0.0417	0.0548

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8743	7.8560	1.1839	580.1469	30.0022	249.3999	1.9333

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
186694.641	0.438	598.512	531931.500	0.105822E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 5.988 EfDer = 0.999 SH = 0.107663E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.729	3775.949	7.856	580.147	1.000	1.000	0.980

W Kg/sec = 25.786 Wdry = 56.723 WH2O = 0.006 lbm/sec H2O = 0.058g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
112.263	3570.387	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
101147.570	44510.887	1.562	513.330	328.658	395.845	1.204

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	472.90	-0.16	472.90	0.41	0.69	600.08
MEAN	16.97	0.00	-0.02	472.90	-0.16	472.90	0.41	0.63	
HUB	14.32	0.00	-0.02	472.90	-0.16	472.90	0.41	0.58	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.32	46.36	6.96	634.64	791.59	7.01	562.18	508.54	0.12
MEAN	49.79	43.80	5.99	559.21	732.48	7.01	562.18	508.54	0.12
HUB	44.95	37.84	7.11	471.86	668.16	7.01	562.18	508.54	0.12

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	552.78	284.40	474.01	1176.59	0.47	2.16	1.89	8.34
MEAN	16.57	564.63	295.58	481.09	1173.00	0.48	2.24	1.97	6.35
HUB	13.89	611.25	367.16	488.69	1169.62	0.52	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	622.12	582.02	337.72	0.49	5372.59	0.92	0.91		
MEAN	546.13	542.42	250.56	0.46	4901.59	0.92	0.91	0.91	1.46
HUB	457.69	497.01	90.54	0.42	5102.17	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.21	1.17	7.93	608.59	1.05	584.04	518.87	0.07
MEAN	9.09	1.16	7.77	606.10	1.04	580.49	518.00	0.08
HUB	9.14	1.16	7.60	607.16	1.05	577.14	518.39	0.08

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.96	35.47	31.50	3.97	0.93	0.39	1.40
MEAN	31.57	27.51	23.50	4.01	0.92	0.38	1.62
HUB	36.92	10.50	6.50	4.00	0.92	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	610.8989	297.2372	533.7111	1169.7341	0.5223	-0.1230	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1306	7.5993	577.3080	518.4047	0.0837	29.1145	32.4000	3.2855

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	528.5637	118.5414	515.0995	1177.3431	0.4489	0.1322	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.1133	7.9502	584.8434	518.3301	432.2457	0.0225	0.3173

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	524.2517	0.0000	524.2517	1177.6812	0.4452	0.2269	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9468	585.2104	518.2707	0.0000	0.0600	0.0403	0.1297

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8768	9.0889	1.1569	607.2829	27.1376	251.3242	1.9482

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
168952.078	0.437	541.633	524904.125	0.109170E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.349 EfDer = 1.000 SH = 0.111976E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.729	3775.949	9.089	607.283	1.000	1.000	0.980

W Kg/sec = 25.786 Wdry = 56.723 WH2O = 0.006 lbm/sec H2O = 0.068g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
99.278	3489.705	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
89718.289	44510.813	1.753	509.668	290.665	384.739	1.324

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	422.48	-0.15	422.48	0.36	0.62	557.89
MEAN	15.91	0.00	-0.02	422.48	-0.15	422.48	0.36	0.57	
HUB	13.07	0.00	-0.02	422.48	-0.15	422.48	0.36	0.51	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.02	47.36	7.66	603.67	736.94	8.33	592.95	518.25	0.06
MEAN	51.15	44.80	6.35	524.36	673.49	8.33	592.95	518.25	0.06
HUB	45.56	38.84	6.72	430.67	603.40	8.33	592.95	518.25	0.06

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	513.58	285.28	427.07	1205.48	0.43	2.05	1.78	7.43
MEAN	15.50	518.68	283.83	434.12	1201.31	0.43	2.13	1.86	5.75
HUB	12.59	553.35	333.48	441.57	1197.32	0.46	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	591.15	525.30	305.87	0.44	5120.54	0.92	0.91		
MEAN	510.67	489.81	226.83	0.41	4401.06	0.92	0.91	0.91	1.51
HUB	414.86	449.01	81.38	0.38	4200.39	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.51	1.16	9.29	634.38	1.04	613.20	527.42	0.04
MEAN	10.30	1.13	9.08	630.57	1.04	608.97	526.17	0.05
HUB	10.24	1.13	8.86	629.51	1.04	604.92	525.83	0.05

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.74	35.61	31.50	4.11	0.93	0.42	1.40
MEAN	33.18	27.59	23.50	4.09	0.93	0.40	1.64
HUB	37.06	10.44	6.50	3.94	0.93	0.39	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	578.2930	289.0388	500.8787	1196.9791	0.4831	-0.2022	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3247	8.8189	604.6398	526.4333	0.0490	29.9877	33.0000	3.0123

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   506.6764   115.7000   493.2895  1203.1389     0.4211     0.0414     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.2978     9.1297   610.8771   526.3521   410.5396     0.0411     0.3323

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   490.6599     0.0000   490.6599  1204.3715     0.4074     0.2538     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.2011   612.1613   526.3532     0.0000     0.0600     0.0397     0.0975

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8796    10.2996     1.1332   631.4853    24.2042   257.7965     1.9984

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 150772.984       0.431     483.353  532480.375   0.114172E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3213   Tt4 =   631.4853   T1  =   477.9181

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    955601.44   3063.5007    187.7015      2.4151      0.8569      4.3820      1.3213     37.3740
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*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 76.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.713   EfDer =  0.996    SH =  0.954351E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     55.788    3744.103       4.265     477.918       1.000       1.000       0.980
 W Kg/sec =  25.358  Wdry =  55.782  WH2O = 0.005  lbm/sec   H2O =   0.034g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     184.585    3900.570       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 151405.516   43772.148       1.539     831.557     540.317     619.754       1.147

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   436.98    -0.15   436.98     0.42     0.77   702.20
 MEAN    17.06     0.00    -0.02   436.98    -0.15   436.98     0.42     0.68
 HUB     12.51     0.00    -0.02   436.98    -0.15   436.98     0.42     0.57

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.05    50.47     6.58   674.05   803.43     3.79   462.56   460.83     2.31
 MEAN    51.91    47.20     4.71   557.41   708.40     3.79   462.56   460.83     2.31
 HUB     43.10    38.62     4.48   408.74   598.45     3.79   462.56   460.83     2.31

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   673.86   365.54   566.09  1068.03      0.63     7.29     6.52    16.04
 MEAN    18.04   712.01   411.12   581.33  1062.55      0.67     7.43     6.80    12.53
 HUB     15.00   825.65   551.21   614.70  1051.82      0.78     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    674.05   644.70   308.51     0.60  7544.23      0.92     0.91
 MEAN   589.30   608.02   178.18     0.57  7417.55      0.92     0.91     0.91     1.29
 HUB    490.10   617.73    61.11     0.59  8270.07      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.55     1.30     4.26   517.57     1.08   481.05   482.72     1.17
 MEAN     5.53     1.30     4.11   516.90     1.08   476.13   482.50     1.39
 HUB      5.69     1.33     3.80   521.38     1.09   466.56   485.08     1.98

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.85    28.59    24.20     4.39     0.93     0.32     1.80
 MEAN    35.27    17.04    12.70     4.34     0.92     0.28     2.22
 HUB     41.88    -5.68    -9.30     3.62     0.92     0.13     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.996       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   757.2471   410.3220   636.4424  1058.4916     0.7154    -0.0827     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.5752     3.9790   472.4993   483.4329     1.5922    32.8104    35.4000     2.5896

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   602.1732   147.3100   583.8770  1077.3073     0.5590     0.2865     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5448     4.4963   489.4547   482.9673   554.9116     0.0298     0.4033

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   598.5666     0.0000   598.5666  1077.6682     0.5554     0.3185     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4875   489.8061   482.8986     0.0000     0.0600     0.0462     0.2807
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8668     5.5197     1.2943   518.6158    40.6987   225.1945     1.7457

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 253057.094       0.557     797.791  607014.063   0.992119E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.649   EfDer =  0.999    SH =  0.102830E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     55.788    3744.103       5.520     518.616       1.000       1.000       0.980
 W Kg/sec =  25.358  Wdry =  55.782  WH2O = 0.006  lbm/sec   H2O =   0.042g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    148.561    3744.407       1.381       0.248      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 131131.219   43772.020       1.358     590.487     434.878     468.502       1.077

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   532.98    -0.18   532.98     0.49     0.79   671.47
 MEAN    18.08     0.00    -0.02   532.98    -0.18   532.98     0.49     0.73
 HUB     15.21     0.00    -0.02   532.98    -0.18   532.98     0.49     0.67

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.57    46.36     5.21   671.44   857.40     4.69   495.78   482.83     0.74
 MEAN    47.95    42.30     5.65   590.68   795.73     4.69   495.78   482.83     0.74
 HUB     43.01    37.84     5.17   496.96   728.85     4.69   495.78   482.83     0.74

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   602.92   292.76   527.07  1111.25      0.54     2.33     2.04     9.02
 MEAN    18.01   619.56   309.93   536.47  1107.27      0.56     2.40     2.13     7.35
 HUB     15.22   675.34   396.67   546.57  1103.61      0.61     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    667.19   646.53   374.43     0.58  5981.93      0.92     0.91
 MEAN   588.45   604.46   278.52     0.55  5585.09      0.92     0.91     0.91     1.42
 HUB    497.39   555.77   100.71     0.50  6041.36      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.22     5.51   550.05     1.06   520.82   497.01     0.34
 MEAN     6.63     1.20     5.37   547.96     1.06   517.10   496.15     0.38
 HUB      6.72     1.22     5.24   550.36     1.06   513.69   497.22     0.42

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.05    35.39    31.50     3.89     0.93     0.37     1.40
 MEAN    30.02    27.44    23.50     3.94     0.92     0.36     1.63
 HUB     35.97    10.44     6.50     3.94     0.92     0.38     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   695.0513   310.7972   621.6924  1100.2803     0.6317    -0.1933     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6730     5.1165   510.6176   496.8402     0.4620    26.5614    30.6000     4.0386

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   586.2198   124.2828   572.8939  1112.2983     0.5270     0.1096     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6486     5.5151   521.8267   496.6447   491.5697     0.0285     0.2760

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   614.7243     0.0000   614.7243  1109.3397     0.5541     0.1771     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3921	519.0778	496.6137	0.0000	0.0600	0.0457	0.0160

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8696	6.6261	1.2004	549.4545	30.8395	257.9684	1.9998

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
191829.969	0.431	604.766	546200.313	0.103929E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.900 EfDer = 0.999 SH = 0.105299E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
55.788	3744.103	6.626	549.454	1.000	1.000	0.980

W Kg/sec = 25.358 Wdry = 55.782 WH2O = 0.006 lbm/sec H2O = 0.050g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
127.381	3637.810	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
113337.758	43771.980	1.463	545.479	372.896	424.468	1.138

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	498.66	-0.17	498.66	0.45	0.74	637.12
MEAN	17.74	0.00	-0.02	498.66	-0.17	498.66	0.45	0.68	
HUB	15.05	0.00	-0.02	498.66	-0.17	498.66	0.45	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.76	46.36	6.40	655.76	823.96	5.79	529.47	496.52	0.27
MEAN	49.30	43.40	5.90	579.58	764.71	5.79	529.47	496.52	0.27
HUB	44.61	38.84	5.77	491.74	700.46	5.79	529.47	496.52	0.27

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	577.42	293.02	497.55	1145.16	0.50	2.26	1.98	8.75
MEAN	17.51	592.20	308.77	505.34	1141.55	0.52	2.34	2.07	6.78
HUB	14.85	644.76	389.59	513.74	1138.18	0.57	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	647.26	610.77	354.24	0.53	5808.14	0.92	0.91		
MEAN	572.00	569.78	263.23	0.50	5408.51	0.92	0.91	0.91	1.45
HUB	485.20	522.56	95.61	0.46	5788.05	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.93	1.20	6.68	579.96	1.06	553.16	508.72	0.15
MEAN	7.83	1.18	6.53	577.86	1.05	549.67	507.93	0.16
HUB	7.92	1.20	6.39	579.86	1.06	546.44	508.72	0.17

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.49	35.45	31.50	3.95	0.93	0.38	1.40
MEAN	31.43	27.52	23.50	4.02	0.92	0.38	1.62
HUB	37.17	10.54	6.50	4.04	0.92	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	657.8067	310.7941	579.7557	1136.0659	0.5790	-0.1747	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8816	6.2973	544.4531	508.4632	0.1814	28.1948	31.5000	3.3052

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	559.3256	122.0131	545.8552	1146.0768	0.4880	0.1164	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8611	6.6931	554.0847	508.3450	451.3937	0.0250	0.3016

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	571.1782	0.0000	571.1782	1144.9354	0.4989	0.2091	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6285	553.0109	508.2993	0.0000	0.0600	0.0403	0.0689

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8768	7.8403	1.1832	579.2253	29.7720	246.1767	1.9083

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
185262.813	0.442	584.062	521475.000	0.106506E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.296 EfDer = 1.000 SH = 0.108471E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
55.788	3744.103	7.840	579.225	1.000	1.000	0.980

W Kg/sec = 25.358 Wdry = 55.782 WH2O = 0.006 lbm/sec H2O = 0.059g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
110.533	3543.089	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
99205.375	43771.922	1.586	513.330	323.593	395.845	1.223

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	463.82	-0.16	463.82	0.40	0.68	595.49
MEAN	16.97	0.00	-0.02	463.82	-0.16	463.82	0.40	0.63	
HUB	14.32	0.00	-0.02	463.82	-0.16	463.82	0.40	0.57	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.61	46.36	7.25	629.29	781.88	7.02	561.94	508.25	0.12
MEAN	50.10	43.80	6.30	554.49	723.03	7.02	561.94	508.25	0.12
HUB	45.26	37.84	7.42	467.88	658.93	7.02	561.94	508.25	0.12

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	545.90	285.53	465.27	1176.15	0.46	2.16	1.89	8.34
MEAN	16.57	557.19	295.71	472.24	1172.54	0.48	2.24	1.97	6.35
HUB	13.89	602.83	365.07	479.72	1169.13	0.52	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	616.87	571.20	331.35	0.49	5393.87	0.92	0.91		
MEAN	541.53	532.39	245.81	0.45	4903.83	0.92	0.91	0.91	1.47
HUB	453.83	487.86	88.77	0.42	5073.08	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.19	1.17	7.94	607.54	1.05	583.60	518.58	0.07
MEAN	9.06	1.16	7.78	604.97	1.04	580.03	517.68	0.08
HUB	9.10	1.16	7.61	605.86	1.05	576.66	518.01	0.09

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.54	35.46	31.50	3.96	0.93	0.40	1.40
MEAN	32.05	27.50	23.50	4.00	0.93	0.39	1.62
HUB	37.27	10.48	6.50	3.98	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	602.0663	297.3763	523.4989	1169.4316	0.5148	-0.1205	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1033	7.6150	577.0082	518.0703	0.0852	29.5990	32.4000	2.8010

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	518.3566	116.2522	505.1524	1177.0397	0.4404	0.1430	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.0877     7.9680   584.5416   517.9998   432.2457     0.0217     0.3242

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   514.1156     0.0000   514.1156  1177.3646     0.4367     0.2350     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.9647   584.8954   517.9423     0.0000     0.0600     0.0393     0.1405

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8786     9.0641     1.1561   606.1227    26.8990   248.4414     1.9259

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 167465.750       0.440     527.955  515217.938   0.110081E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.617   EfDer =  1.000    SH =  0.113018E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     55.788    3744.103       9.064     606.122       1.000       1.000       0.980
 W Kg/sec =  25.358  Wdry =  55.781  WH2O = 0.006  lbm/sec   H2O =   0.069g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     97.804    3463.583       1.381       0.249      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  88113.570   43771.844       1.780     509.668     286.350     384.739       1.344

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   414.92    -0.14   414.92     0.35     0.61   553.71
 MEAN   15.91     0.00    -0.02   414.92    -0.14   414.92     0.35     0.56
 HUB    13.07     0.00    -0.02   414.92    -0.14   414.92     0.35     0.50

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    55.28    47.36     7.92   598.58   728.44     8.34   592.30   517.92     0.06
 MEAN   51.42    44.80     6.62   519.93   665.31     8.34   592.30   517.92     0.06
 HUB    45.83    38.84     6.99   427.04   595.52     8.34   592.30   517.92     0.06

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   507.73   285.65   419.75  1204.62     0.42     2.05     1.78     7.43
 MEAN   15.50   512.27   283.53   426.65  1200.48     0.43     2.13     1.86     5.75
 HUB    12.59   546.05   331.47   433.94  1196.49     0.46     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   586.16   516.24   300.52     0.43  5127.11     0.92     0.91
 MEAN  506.36   481.34   222.83     0.40  4396.36     0.92     0.91     0.91     1.52
 HUB   411.36   441.23    79.89     0.37  4175.03     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.47     1.16     9.28   633.02     1.04   612.33   527.06     0.04
 MEAN   10.26     1.13     9.07   629.19     1.04   608.12   525.80     0.05
 HUB    10.20     1.13     8.86   628.03     1.04   604.09   525.42     0.05

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    34.24    35.60    31.50     4.10     0.93     0.43     1.40
 MEAN   33.61    27.58    23.50     4.08     0.93     0.41     1.64
 HUB    37.37    10.43     6.50     3.93     0.93     0.39     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   570.3395   288.7323   491.8545  1196.3169     0.4767    -0.1994     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.2863     8.8218   603.9677   526.0556     0.0503    30.4141    33.0000     2.5859
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   497.3902   113.5795   484.2486  1202.4943     0.4136     0.0532     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.2618     9.1359   610.2202   525.9796   410.5396     0.0397     0.3383

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   481.8195     0.0000   481.8195  1203.6700     0.4003     0.2607     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.2036   611.4459   525.9791     0.0000     0.0600     0.0389     0.1077

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8810    10.2629     1.1323   630.0800    23.9591   255.2690     1.9788

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 149244.734       0.434     470.511  523265.406   0.115329E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3184   Tt4 =   630.0800   T1  =   477.9180

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    946860.38   2985.0847    184.5854      2.4065      0.8609      4.7132      1.3184     37.3740
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100µm, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.825   EfDer =  0.984    SH =  0.443884E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     63.105    3888.739       4.265     457.739       1.000       1.000       0.980
 W Kg/sec =  28.684  Wdry =  63.102  WH2O = 0.003  lbm/sec   H2O =   0.016g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    204.336    4139.589       1.381       0.248      53.350      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 168221.516   49514.516       1.390     831.557     598.111     619.754       1.036

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   485.51    -0.17   485.51     0.48     0.84   745.23
 MEAN    17.06     0.00    -0.02   485.51    -0.17   485.51     0.48     0.74
 HUB     12.51     0.00    -0.02   485.51    -0.17   485.51     0.48     0.63

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.27     50.47     4.80   700.09    852.11     3.66   438.78   448.38     3.34
 MEAN    50.02     47.20     2.82   578.95    755.71     3.66   438.78   448.38     3.34
 HUB     41.18     38.62     2.56   424.53    645.05     3.66   438.78   448.38     3.34

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   728.15   352.65   637.06  1038.53     0.70     7.29     6.52    16.04
 MEAN    18.04   773.29   411.15   654.94  1033.16     0.75     7.43     6.80    12.53
 HUB     15.00   914.43   580.07   706.89  1019.12     0.90     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    700.09   725.64   347.44     0.70  7278.69     0.92     0.90
 MEAN   612.06   685.06   200.92     0.66  7418.28     0.92     0.90     0.90     1.21
 HUB    509.03   710.45    71.03     0.70  8703.12     0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.60     1.31     4.05   497.48     1.09   454.83   473.89     1.66
 MEAN     5.63     1.32     3.90   498.24     1.09   450.14   474.44     2.01
 HUB      5.89     1.38     3.51   505.25     1.10   437.99   478.89     3.35

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.97    28.61    24.20     4.41     0.93     0.26     1.80
 MEAN    32.12    17.05    12.70     4.35     0.91     0.22     2.22
 HUB     39.37    -5.74    -9.30     3.56     0.91     0.06     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.984       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   836.5803   410.3469   729.0281  1026.1238     0.8153    -0.1085     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.6891     3.6924   444.0253   475.7800     2.5821    29.3738    35.4000     6.0262

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   682.0183   166.8425   661.2961  1047.7080     0.6510     0.2262     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.6275     4.2469   462.9077   475.1944   554.9116     0.0426     0.3572

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   684.4385     0.0000   684.4385  1047.3906     0.6535     0.2507     1.3089
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.1929	462.6455	475.0654	0.0000	0.0600	0.0744	0.1976

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8211	5.5675	1.3055	500.3240	42.5848	238.3450	1.8476

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
264725.375	0.540	944.044	727643.000	0.445085E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.415 EfDer = 0.989 SH = 0.445085E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.105	3888.739	5.568	500.324	1.000	1.000	0.980

W Kg/sec = 28.684 Wdry = 63.102 WH2O = 0.003 lbm/sec H2O = 0.018g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
163.640	3959.508	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
147273.047	49514.516	1.233	590.487	478.994	468.502	0.978

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	598.58	-0.21	598.58	0.57	0.87	710.05
MEAN	18.08	0.00	-0.02	598.58	-0.21	598.58	0.57	0.81	
HUB	15.21	0.00	-0.02	598.58	-0.21	598.58	0.57	0.75	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.37	46.36	3.01	697.38	919.20	4.49	471.51	474.95	0.85
MEAN	45.71	42.30	3.41	613.50	857.28	4.49	471.51	474.95	0.85
HUB	40.78	37.84	2.94	516.16	790.53	4.49	471.51	474.95	0.85

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	648.44	273.76	587.82	1085.62	0.60	2.33	2.04	9.02
MEAN	18.01	668.25	299.53	597.36	1082.15	0.62	2.40	2.13	7.35
HUB	15.22	729.52	403.24	607.94	1079.05	0.68	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	692.97	721.99	419.21	0.67	5594.33	0.92	0.90		
MEAN	611.18	673.77	311.65	0.62	5398.31	0.92	0.90	0.90	1.37
HUB	516.60	618.42	113.36	0.57	6141.63	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.76	1.21	5.33	530.86	1.06	497.04	490.41	0.35
MEAN	6.72	1.21	5.21	529.79	1.06	493.88	489.93	0.39
HUB	6.89	1.24	5.09	533.85	1.07	491.05	491.87	0.42

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	24.97	35.50	31.50	4.00	0.93	0.32	1.40
MEAN	26.63	27.55	23.50	4.05	0.92	0.32	1.63
HUB	33.56	10.56	6.50	4.06	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.989	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	767.1641	300.3741	705.9150	1071.4438	0.7160	-0.2389	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7753	4.8329	484.1721	490.8008	0.5316	23.0503	30.6000	7.5497

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	663.8439	140.7396	648.7535	1084.5289	0.6121	0.0168	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7239	5.2368	496.0599	490.5658	491.5697	0.0425	0.2181

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	707.5630	0.0000	707.5630	1079.2306	0.6556	0.0936	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0147	491.2417	490.4802	0.0000	0.0600	0.0762	-0.1236

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8212	6.6706	1.1981	531.5005	31.1769	281.7019	2.1837

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
193870.453	0.404	691.367	658809.688	0.445085E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.772 EfDer = 0.991 SH = 0.445085E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.105	3888.739	6.671	531.500	1.000	1.000	0.980

W Kg/sec = 28.684 Wdry = 63.102 WH2O = 0.003 lbm/sec H2O = 0.021g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
140.770	3841.625	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
126856.406	49514.516	1.324	545.479	412.067	424.468	1.030

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	558.14	-0.19	558.14	0.51	0.80	672.82
MEAN	17.74	0.00	-0.02	558.14	-0.19	558.14	0.51	0.75	
HUB	15.05	0.00	-0.02	558.14	-0.19	558.14	0.51	0.69	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.67	46.36	4.31	681.09	880.72	5.60	506.45	490.37	0.25
MEAN	47.17	43.40	3.77	601.97	821.05	5.60	506.45	490.37	0.25
HUB	42.47	38.84	3.63	510.73	756.68	5.60	506.45	490.37	0.25

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	618.97	276.65	553.70	1121.64	0.55	2.26	1.98	8.75
MEAN	17.51	636.91	300.22	561.71	1118.42	0.57	2.34	2.07	6.78
HUB	14.85	694.91	396.62	570.60	1115.50	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	672.27	680.51	395.62	0.61	5484.27	0.92	0.91		
MEAN	594.10	633.94	293.87	0.57	5259.27	0.92	0.91	0.91	1.39
HUB	503.94	580.61	107.32	0.52	5892.77	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.99	1.20	6.51	561.43	1.06	530.62	503.48	0.12
MEAN	7.93	1.19	6.38	560.20	1.05	527.58	502.98	0.14
HUB	8.09	1.21	6.25	563.66	1.06	524.83	504.43	0.15

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.55	35.55	31.50	4.05	0.93	0.34	1.40
MEAN	28.12	27.62	23.50	4.12	0.92	0.34	1.62
HUB	34.80	10.65	6.50	4.15	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.991	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	719.0923	302.1923	652.5133	1110.5192	0.6475	-0.2069	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9892	6.0468	520.1934	503.6337	0.1659	24.8498	31.5000	6.6502

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	629.6356	137.3508	614.4720	1120.8344	0.5618	0.0307	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.9476	6.4317	529.8911	503.4904	451.3937	0.0356	0.2512

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	647.1346	0.0000	647.1346	1118.9131	0.5784	0.1404	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.3195	528.0984	503.3997	0.0000	0.0600	0.0615	-0.0383

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8429	7.9057	1.1852	561.7632	30.2630	267.2842	2.0720

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
188246.234	0.417	671.310	622596.438	0.445085E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 4.347 EfDer = 0.994 SH = 0.445085E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
63.105	3888.739	7.906	561.763	1.000	1.000	0.980

W Kg/sec = 28.684 Wdry = 63.102 WH2O = 0.003 lbm/sec H2O = 0.025g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
122.113	3736.718	1.381	0.249	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
110375.500	49514.516	1.436	513.330	357.471	395.845	1.107

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	516.04	-0.18	516.04	0.46	0.74	628.03
MEAN	16.97	0.00	-0.02	516.04	-0.18	516.04	0.46	0.68	
HUB	14.32	0.00	-0.02	516.04	-0.18	516.04	0.46	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.72	46.36	5.36	653.60	832.90	6.87	540.36	503.36	0.09
MEAN	48.15	43.80	4.35	575.91	773.42	6.87	540.36	503.36	0.09
HUB	43.29	37.84	5.45	485.96	708.96	6.87	540.36	503.36	0.09

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	582.74	272.86	514.91	1154.85	0.50	2.16	1.89	8.34
MEAN	16.57	597.26	289.50	522.40	1151.45	0.52	2.24	1.97	6.35
HUB	13.89	648.17	372.33	530.56	1148.29	0.56	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	640.70	632.81	367.84	0.55	5155.07	0.92	0.91		
MEAN	562.45	589.41	272.95	0.51	4801.07	0.92	0.91	0.91	1.42
HUB	471.37	539.72	99.03	0.47	5174.24	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.29	1.18	7.82	589.89	1.05	562.59	514.39	0.05
MEAN	9.19	1.16	7.67	587.95	1.05	559.28	513.67	0.06
HUB	9.30	1.18	7.51	589.99	1.05	556.22	514.45	0.06

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	27.92	35.54	31.50	4.04	0.93	0.36	1.40
MEAN	28.99	27.59	23.50	4.09	0.92	0.35	1.62
HUB	35.06	10.57	6.50	4.07	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	651.2548	291.1232	582.5634	1147.1807	0.5677	-0.1379	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.2429	7.4475	555.1934	514.1461	0.0643	26.5526	32.4000	5.8474

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   577.7452   129.5714   563.0283  1154.6599     0.5004     0.0717     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.2122     7.7808   562.4527   514.0582   432.2457     0.0293     0.2811

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   573.1793     0.0000   573.1793  1155.0710     0.4962     0.1832     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.7765   562.8777   513.9896     0.0000     0.0600     0.0481     0.0690

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8607     9.1821     1.1615   589.2758    27.5132   267.6995     2.0752

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 171212.063       0.417     610.564  609620.375   0.445085E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 4.944   EfDer =  0.997    SH =  0.445085E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     63.105    3888.739       9.182     589.276       1.000       1.000       0.980
 W Kg/sec =  28.684  Wdry =  63.102  WH2O = 0.003  lbm/sec   H2O =   0.028g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    107.681    3648.443       1.381       0.249      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  97131.344   49514.516       1.617     509.668     315.243     384.739       1.220

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   457.39    -0.16   457.39     0.39     0.66   583.27
 MEAN    15.91     0.00    -0.02   457.39    -0.16   457.39     0.39     0.61
 HUB     13.07     0.00    -0.02   457.39    -0.16   457.39     0.39     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.66    47.36     6.30   621.70   771.95     8.27   572.47   513.97     0.04
 MEAN    49.74    44.80     4.94   540.02   707.81     8.27   572.47   513.97     0.04
 HUB     44.13    38.84     5.29   443.54   637.24     8.27   572.47   513.97     0.04

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   537.86   278.41   460.20  1185.82      0.45     2.05     1.78     7.43
 MEAN    15.50   545.77   280.70   468.05  1181.61      0.46     2.13     1.86     5.75
 HUB     12.59   584.63   338.93   476.36  1177.61      0.50     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    608.81   566.52   330.40     0.48  4997.50      0.92     0.91
 MEAN   525.92   528.40   245.22     0.45  4352.73      0.92     0.91     0.91     1.47
 HUB    427.25   484.48    88.32     0.41  4269.15      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.67     1.16     9.28   616.52     1.05   593.28   523.82     0.03
 MEAN    10.47     1.14     9.06   613.01     1.04   589.08   522.59     0.03
 HUB     10.44     1.14     8.84   612.55     1.04   585.09   522.44     0.03

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.17    35.68    31.50     4.18     0.93     0.39     1.40
 MEAN    30.95    27.65    23.50     4.15     0.92     0.37     1.64
 HUB     35.43    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   613.5728   285.8502   542.9191  1176.2455     0.5216    -0.2187     2.0437
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    Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
   10.4942     8.7380   583.7910   522.8988     0.0330    27.7671    33.0000     5.2329

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG        Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   550.4866   125.7041   535.9422  1182.1780     0.4657    -0.0247     2.1315

   BlockageTh  PtTh      PsTh       TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4485     9.0229   589.6885   522.7907   410.5396     0.0513     0.3017

    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   531.8795     0.0000   531.8795  1183.7756     0.4493     0.2175     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.1199   591.3085   522.8050     0.0000     0.0600     0.0459     0.0416

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4       Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8684    10.4564     1.1388   614.0286    24.7535   271.7440     2.1065

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 154114.000       0.416     549.590  613702.688   0.445090E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3414   Tt4 =   614.0286   T1  =   457.7394

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    972168.13   3466.8740    204.3360      2.4518      0.8224      2.8245      1.3414     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 84.0%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.054   EfDer =  0.993    SH =  0.444985E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     58.953    3728.445       4.265     457.739       1.000       1.000       0.980
  W Kg/sec =  26.797  Wdry =  58.951  WH2O = 0.003  lbm/sec   H2O =   0.016g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     190.892    3968.956       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 154378.781   46256.785       1.488     831.557     558.760     619.754       1.109

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   445.56    -0.15   445.56     0.44     0.79   714.51
 MEAN    17.06     0.00    -0.02   445.56    -0.15   445.56     0.44     0.70
 HUB     12.51     0.00    -0.02   445.56    -0.15   445.56     0.44     0.59

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.43    50.47     5.96   671.23   805.78      3.75   441.77   448.34     2.94
 MEAN    51.25    47.20     4.05   555.08   711.91      3.75   441.77   448.34     2.94
 HUB     42.42    38.62     3.80   407.04   603.60      3.75   441.77   448.34     2.94

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   679.65   355.41   579.31  1043.25      0.65     7.29     6.52    16.04
 MEAN    18.04   719.42   404.37   595.02  1037.92      0.69     7.43     6.80    12.53
 HUB     15.00   838.64   551.01   632.21  1026.59      0.82     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    671.23   659.81   315.83     0.63  7335.25      0.92     0.91
 MEAN   586.84   622.37   182.47     0.60  7295.77      0.92     0.91     0.91     1.26
 HUB    488.05   635.34    62.96     0.62  8267.14      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.56     1.30     4.20   496.14     1.08   458.98   473.07     1.42
 MEAN     5.56     1.30     4.04   495.93     1.08   454.30   473.03     1.71
 HUB      5.75     1.35     3.72   501.01     1.09   444.44   476.23     2.56

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.53    28.60    24.20     4.40     0.93     0.30     1.80
 MEAN    34.20    17.05    12.70     4.35     0.92     0.26     2.22
 HUB     41.07    -5.69    -9.30     3.61     0.92     0.11     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   768.5572   403.5804   654.0665  1033.2010     0.7439    -0.0897     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.6060     3.8981   450.1783   474.1157     2.0096    31.6759    35.4000     3.7241

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   617.0998   150.9614   598.3500  1052.3896     0.5864     0.2666     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5685     4.4242   467.0609   473.7354   554.9116     0.0329     0.3882

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   614.4968     0.0000   614.4968  1052.6633     0.5838     0.2980     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4070   467.3215   473.6611     0.0000     0.0600     0.0530     0.2561
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8557     5.5357     1.2981   497.6919    39.9530   229.6383     1.7801

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 248374.625       0.551     827.460  667766.375   0.446285E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 4.908   EfDer =  0.997    SH =  0.446285E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     58.953    3728.445       5.536     497.692       1.000       1.000       0.980
 W Kg/sec =  26.797  Wdry =  58.951  WH2O = 0.003  lbm/sec   H2O =   0.019g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    153.345    3806.323       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 134017.313   46256.781       1.316     590.487     448.863     468.502       1.044

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   544.71    -0.19   544.71     0.51     0.81   682.58
 MEAN    18.08     0.00    -0.02   544.71    -0.19   544.71     0.51     0.76
 HUB     15.21     0.00    -0.02   544.71    -0.19   544.71     0.51     0.69

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     50.84    46.36     4.48   668.63   862.57     4.63   473.83   473.59     0.80
 MEAN    47.21    42.30     4.91   588.21   801.82     4.63   473.83   473.59     0.80
 HUB     42.27    37.84     4.43   494.89   736.07     4.63   473.83   473.59     0.80

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   607.12   282.00   537.65  1086.88     0.56     2.33     2.04     9.02
 MEAN    18.01   624.62   301.59   546.99  1083.11     0.58     2.40     2.13     7.35
 HUB     15.22   681.33   392.27   557.08  1079.68     0.63     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    664.40   659.77   382.40     0.61  5762.26     0.92     0.91
 MEAN   585.99   616.51   284.40     0.57  5434.94     0.92     0.91     0.91     1.40
 HUB    495.31   566.52   103.03     0.52  5974.44     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.73     1.22     5.46   527.85     1.06   498.20   489.17     0.34
 MEAN     6.65     1.20     5.33   526.14     1.06   494.76   488.36     0.38
 HUB      6.77     1.22     5.20   528.96     1.06   491.62   489.75     0.42

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     27.68    35.42    31.50     3.92     0.93     0.35     1.40
 MEAN    28.87    27.47    23.50     3.97     0.92     0.35     1.63
 HUB     35.15    10.48     6.50     3.98     0.92     0.37     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   705.1912   302.4327  637.0471  1075.2902     0.6558    -0.2059     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7041     5.0390   487.6577   489.1227     0.4810    25.3956    30.6000     5.2044

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   600.3220   127.2725   586.6756  1087.3662     0.5521     0.0808     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6732     5.4383   498.6663   488.9637   491.5697     0.0322     0.2579

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   631.7783     0.0000   631.7783  1083.9473     0.5828     0.1524     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.2928	495.5522	488.9169	0.0000	0.0600	0.0533	-0.0237

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8583	6.6438	1.2002	527.6478	29.9562	265.4798	2.0580

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
186282.938	0.422	620.601	601618.438	0.446285E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.203 EfDer = 0.998 SH = 0.446285E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.953	3728.445	6.644	527.648	1.000	1.000	0.980

W Kg/sec = 26.797 Wdry = 58.951 WH2O = 0.003 lbm/sec H2O = 0.022g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
131.559	3696.697	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
115671.336	46256.781	1.416	545.479	385.106	424.468	1.102

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	508.93	-0.18	508.93	0.46	0.76	647.43
MEAN	17.74	0.00	-0.02	508.93	-0.18	508.93	0.46	0.70	
HUB	15.05	0.00	-0.02	508.93	-0.18	508.93	0.46	0.64	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.08	46.36	5.72	653.01	828.05	5.74	506.82	488.85	0.26
MEAN	48.60	43.40	5.20	577.15	769.62	5.74	506.82	488.85	0.26
HUB	43.91	38.84	5.07	489.68	706.38	5.74	506.82	488.85	0.26

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	580.71	283.21	506.96	1120.87	0.52	2.26	1.98	8.75
MEAN	17.51	596.34	301.14	514.72	1117.43	0.53	2.34	2.07	6.78
HUB	14.85	649.85	385.51	523.15	1114.25	0.58	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	644.55	622.56	361.34	0.56	5613.92	0.92	0.91		
MEAN	569.61	580.53	268.46	0.52	5275.08	0.92	0.91	0.91	1.43
HUB	483.17	532.18	97.66	0.48	5727.45	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.95	1.20	6.64	557.02	1.06	529.91	502.02	0.13
MEAN	7.87	1.18	6.50	555.25	1.05	526.65	501.28	0.14
HUB	7.98	1.20	6.35	557.62	1.06	523.66	502.30	0.15

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	29.19	35.48	31.50	3.98	0.93	0.37	1.40
MEAN	30.33	27.55	23.50	4.05	0.92	0.37	1.62
HUB	36.39	10.57	6.50	4.07	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.998	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	665.5081	303.1187	592.4695	1111.4030	0.5988	-0.1839	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9178	6.2313	521.0226	501.8591	0.1665	27.0951	31.5000	4.4049

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	571.6203	124.6951	557.8538	1121.3236	0.5098	0.0897	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8923	6.6242	530.3593	501.7603	451.3937	0.0277	0.2857

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	584.4315	0.0000	584.4315	1120.0437	0.5218	0.1892	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.5504	529.1714	501.7095	0.0000	0.0600	0.0445	0.0383

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8701	7.8683	1.1843	556.6277	28.9803	252.7865	1.9596

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
180268.500	0.434	600.564	572638.500	0.446285E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 5.664 EfDer = 0.999 SH = 0.446285E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.953	3728.445	7.868	556.628	1.000	1.000	0.980

W Kg/sec = 26.797 Wdry = 58.951 WH2O = 0.003 lbm/sec H2O = 0.025g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
114.096	3599.179	1.381	0.249	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
101025.945	46256.781	1.537	513.330	334.002	395.845	1.185

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	472.33	-0.16	472.33	0.42	0.69	604.91
MEAN	16.97	0.00	-0.02	472.33	-0.16	472.33	0.42	0.64	
HUB	14.32	0.00	-0.02	472.33	-0.16	472.33	0.42	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.00	46.36	6.64	626.66	784.86	6.99	538.70	501.68	0.10
MEAN	49.46	43.80	5.66	552.17	726.75	6.99	538.70	501.68	0.10
HUB	44.62	37.84	6.78	465.93	663.58	6.99	538.70	501.68	0.10

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	548.25	277.07	473.08	1152.03	0.48	2.16	1.89	8.34
MEAN	16.57	560.41	289.06	480.11	1148.53	0.49	2.24	1.97	6.35
HUB	13.89	607.03	361.47	487.67	1145.25	0.53	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	614.30	580.97	337.22	0.50	5234.30	0.92	0.91		
MEAN	539.26	541.39	250.20	0.47	4793.63	0.92	0.91	0.91	1.45
HUB	451.94	495.99	90.47	0.43	5023.14	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.23	1.17	7.92	584.00	1.05	559.85	512.70	0.06
MEAN	9.11	1.16	7.75	581.70	1.05	556.46	511.81	0.06
HUB	9.17	1.17	7.59	582.90	1.05	553.28	512.28	0.07

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.36	35.48	31.50	3.98	0.93	0.38	1.40
MEAN	31.05	27.53	23.50	4.03	0.92	0.38	1.62
HUB	36.55	10.51	6.50	4.01	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	607.1824	290.6874	533.0773	1145.1675	0.5302	-0.1256	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1538	7.5767	553.2418	512.2413	0.0697	28.6037	32.4000	3.7963

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	528.0648	118.4295	514.6133	1152.6138	0.4581	0.1205	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.1346	7.9245	560.4595	512.1803	432.2457	0.0236	0.3100

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	523.7771	0.0000	523.7771	1152.9640	0.4543	0.2184	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9211	560.8241	512.1234	0.0000	0.0600	0.0415	0.1181

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8745	9.1093	1.1577	582.8680	26.2409	254.4345	1.9724

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
163290.781	0.433	544.003	564287.438	0.446285E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.066 EfDer = 0.999 SH = 0.446285E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.953	3728.445	9.109	582.868	1.000	1.000	0.980

W Kg/sec = 26.797 Wdry = 58.951 WH2O = 0.003 lbm/sec H2O = 0.028g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
100.848	3517.230	1.381	0.249	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
89490.234	46256.781	1.726	509.668	295.238	384.739	1.303

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	421.40	-0.15	421.40	0.36	0.63	562.29
MEAN	15.91	0.00	-0.02	421.40	-0.15	421.40	0.36	0.58	
HUB	13.07	0.00	-0.02	421.40	-0.15	421.40	0.36	0.52	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.75	47.36	7.39	596.07	730.11	8.33	568.60	512.11	0.05
MEAN	50.87	44.80	6.07	517.76	667.69	8.33	568.60	512.11	0.05
HUB	45.27	38.84	6.43	425.26	598.79	8.33	568.60	512.11	0.05

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	508.78	278.71	425.66	1180.76	0.43	2.05	1.78	7.43
MEAN	15.50	514.34	278.03	432.72	1176.67	0.44	2.13	1.86	5.75
HUB	12.59	549.18	328.39	440.18	1172.74	0.47	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	583.71	523.65	305.01	0.44	5002.63	0.92	0.91		
MEAN	504.24	488.29	226.22	0.41	4311.07	0.92	0.91	0.91	1.50
HUB	409.64	447.62	81.25	0.38	4136.33	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.54	1.16	9.29	609.02	1.04	588.22	521.81	0.03
MEAN	10.33	1.13	9.08	605.41	1.04	584.15	520.51	0.03
HUB	10.28	1.13	8.86	604.49	1.04	580.26	520.19	0.04

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.22	35.62	31.50	4.12	0.93	0.42	1.40
MEAN	32.72	27.60	23.50	4.10	0.93	0.39	1.64
HUB	36.72	10.46	6.50	3.96	0.93	0.39	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	574.3493	283.1256	499.7170	1172.2422	0.4900	-0.2053	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3579	8.8083	579.8094	520.7915	0.0372	29.5347	33.0000	3.4653

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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   505.7049   115.4781   492.3436  1178.2490     0.4292     0.0286     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500    10.3282     9.1146   585.7643   520.7181   410.5396     0.0427     0.3260

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   489.5446     0.0000   489.5446  1179.5245     0.4150     0.2464     0.5109

Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     9.1901   587.0581   520.7215     0.0000     0.0600     0.0407     0.0864

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.8780    10.3309     1.1341   606.3063    23.4391   260.5441     2.0197

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 145920.641       0.428     486.134  571708.250   0.446290E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3246   Tt4 =   606.3063   T1  =   457.7392

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    924137.50   3078.7629    190.8920      2.4224      0.8520      4.0540      1.3246     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 79.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.489   EfDer =  0.995    SH =  0.445307E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     57.632    3683.296       4.265     457.739       1.000       1.000       0.980
 W Kg/sec =  26.196  Wdry =  57.629  WH2O = 0.003  lbm/sec   H2O =   0.016g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     186.614    3920.895       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 150148.797   45220.121       1.522     831.557     546.238     619.754       1.135

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   433.35    -0.15   433.35     0.42     0.77   705.86
 MEAN    17.06     0.00    -0.02   433.35    -0.15   433.35     0.42     0.68
 HUB     12.51     0.00    -0.02   433.35    -0.15   433.35     0.42     0.58

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.84    50.47     6.37   663.11   792.28     3.78   442.63   448.32     2.84
 MEAN    51.69    47.20     4.49   548.36   699.04     3.78   442.63   448.32     2.84
 HUB     42.87    38.62     4.25   402.11   591.27     3.78   442.63   448.32     2.84

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   665.75   356.75   562.10  1044.59      0.64     7.29     6.52    16.04
 MEAN    18.04   703.86   402.76   577.24  1039.25      0.68     7.43     6.80    12.53
 HUB     15.00   817.54   542.93   611.23  1028.51      0.79     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    663.11   640.16   306.36     0.61  7362.73      0.92     0.91
 MEAN   579.73   603.76   176.97     0.58  7266.81      0.92     0.91     0.91     1.28
 HUB    482.14   614.24    60.79     0.60  8145.81      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.55     1.30     4.24   495.81     1.08   460.16   472.87     1.35
 MEAN     5.54     1.30     4.09   495.32     1.08   455.46   472.66     1.63
 HUB      5.71     1.34     3.78   499.86     1.09   446.10   475.52     2.39

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.40    28.59    24.20     4.39     0.93     0.32     1.80
 MEAN    34.91    17.04    12.70     4.34     0.92     0.27     2.22
 HUB     41.61    -5.68    -9.30     3.62     0.92     0.13     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.995       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   749.6251   401.9818   632.7310  1035.0525     0.7242    -0.0849     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.5838     3.9534   451.7950   473.6829     1.8842    32.4283    35.4000     2.9717

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   598.1996   146.3379   580.0241  1053.6848     0.5677     0.2797     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5514     4.4727   468.2130   473.3440   554.9116     0.0308     0.3981

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   594.9142     0.0000   594.9142  1054.0227     0.5644     0.3117     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4615   468.5308   473.2813     0.0000     0.0600     0.0482     0.2726
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8635     5.5240     1.2953   496.9961    39.2573   226.6933     1.7573

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 244052.203       0.555     794.838  649469.438   0.446627E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.396   EfDer =  0.998    SH =  0.446627E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     57.632    3683.296       5.524     496.996       1.000       1.000       0.980
 W Kg/sec =  26.196  Wdry =  57.629  WH2O = 0.003  lbm/sec   H2O =   0.019g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    150.122    3762.862       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 130151.828   45220.121       1.344     590.487     439.428     468.502       1.066

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   528.99    -0.18   528.99     0.50     0.80   674.78
 MEAN    18.08     0.00    -0.02   528.99    -0.18   528.99     0.50     0.74
 HUB     15.21     0.00    -0.02   528.99    -0.18   528.99     0.50     0.68

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.32    46.36     4.96   660.54   846.39     4.67   474.49   473.22     0.78
 MEAN    47.70    42.30     5.40   581.09   785.94     4.67   474.49   473.22     0.78
 HUB     42.75    37.84     4.91   488.89   720.44     4.67   474.49   473.22     0.78

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   595.40   284.75   522.90  1087.27      0.55     2.33     2.04     9.02
 MEAN    18.01   612.10   302.50   532.13  1083.43      0.56     2.40     2.13     7.35
 HUB     15.22   667.38   389.31   542.06  1079.90      0.62     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    656.36   641.49   371.61     0.59  5818.34      0.92     0.91
 MEAN   578.89   599.63   276.39     0.55  5451.23      0.92     0.91     0.91     1.42
 HUB    489.31   551.21   100.00     0.51  5929.28      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.71     1.22     5.49   527.08     1.06   498.57   488.83     0.34
 MEAN     6.63     1.20     5.35   525.18     1.06   495.05   487.93     0.38
 HUB      6.74     1.22     5.22   527.65     1.06   491.83   489.16     0.42

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.57    35.40    31.50     3.90     0.93     0.36     1.40
 MEAN    29.62    27.45    23.50     3.95     0.92     0.36     1.63
 HUB     35.69    10.45     6.50     3.95     0.92     0.37     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.998       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   688.0851   303.3448   617.6107  1076.2865     0.6393    -0.1973     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6807     5.0906   488.5627   488.6660     0.4686    26.1584    30.6000     4.4416

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   582.3045   123.4527   569.0676  1088.1294     0.5351     0.0997     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6544     5.4887   499.3682   488.5233   491.5697     0.0297     0.2697

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   611.2794     0.0000   611.2794  1085.0793     0.5633     0.1687     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3589	496.5897	488.4849	0.0000	0.0600	0.0480	0.0028

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8662	6.6298	1.2002	526.6359	29.6402	260.5184	2.0195

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
184318.453	0.428	600.295	584458.000	0.446627E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.657 EfDer = 0.999 SH = 0.446627E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.632	3683.296	6.630	526.636	1.000	1.000	0.980

W Kg/sec = 26.196 Wdry = 57.629 WH2O = 0.003 lbm/sec H2O = 0.022g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
128.760	3655.439	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
112458.344	45220.121	1.447	545.479	376.911	424.468	1.126

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	494.79	-0.17	494.79	0.45	0.74	640.21
MEAN	17.74	0.00	-0.02	494.79	-0.17	494.79	0.45	0.69	
HUB	15.05	0.00	-0.02	494.79	-0.17	494.79	0.45	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.52	46.36	6.16	645.11	813.14	5.78	506.95	488.43	0.26
MEAN	49.06	43.40	5.66	570.16	755.05	5.78	506.95	488.43	0.26
HUB	44.36	38.84	5.52	483.75	692.10	5.78	506.95	488.43	0.26

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	570.01	285.26	493.50	1120.69	0.51	2.26	1.98	8.75
MEAN	17.51	584.88	301.55	501.15	1117.19	0.52	2.34	2.07	6.78
HUB	14.85	636.98	382.40	509.42	1113.95	0.57	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	636.75	605.88	351.49	0.54	5654.35	0.92	0.91		
MEAN	562.71	565.12	261.16	0.51	5282.07	0.92	0.91	0.91	1.44
HUB	477.32	518.19	94.92	0.47	5681.27	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.93	1.20	6.66	555.86	1.06	529.74	501.61	0.13
MEAN	7.84	1.18	6.52	553.94	1.05	526.43	500.79	0.14
HUB	7.94	1.20	6.38	556.00	1.06	523.38	501.69	0.16

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.03	35.46	31.50	3.96	0.93	0.38	1.40
MEAN	31.04	27.53	23.50	4.03	0.92	0.37	1.62
HUB	36.89	10.55	6.50	4.05	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	650.6865	303.5256	575.5563	1111.6241	0.5853	-0.1778	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8892	6.2732	521.2301	501.3577	0.1665	27.8054	31.5000	3.6946

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	555.3265	121.1407	541.9524	1121.4445	0.4952	0.1070	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8672	6.6672	530.4749	501.2684	451.3937	0.0259	0.2960

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	567.2536	0.0000	567.2536	1120.2856	0.5063	0.2025	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6004	529.4011	501.2236	0.0000	0.0600	0.0413	0.0588

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8751	7.8459	1.1834	555.2670	28.6314	248.4798	1.9262

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
178098.109	0.439	580.036	557417.438	0.446627E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.072 EfDer = 0.999 SH = 0.446627E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
57.632	3683.296	7.846	555.267	1.000	1.000	0.980

W Kg/sec = 26.196 Wdry = 57.629 WH2O = 0.003 lbm/sec H2O = 0.025g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
111.719	3559.950	1.381	0.249	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
98374.984	45220.121	1.570	513.330	327.045	395.845	1.210

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	459.94	-0.16	459.94	0.41	0.68	598.32
MEAN	16.97	0.00	-0.02	459.94	-0.16	459.94	0.41	0.63	
HUB	14.32	0.00	-0.02	459.94	-0.16	459.94	0.41	0.58	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.40	46.36	7.04	619.07	771.35	7.01	538.26	501.19	0.10
MEAN	49.87	43.80	6.07	545.49	713.63	7.01	538.26	501.19	0.10
HUB	45.03	37.84	7.19	460.29	650.81	7.01	538.26	501.19	0.10

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	538.67	278.30	461.21	1151.27	0.47	2.16	1.89	8.34
MEAN	16.57	550.10	288.99	468.08	1147.76	0.48	2.24	1.97	6.35
HUB	13.89	595.43	358.42	475.46	1144.45	0.52	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	606.86	566.27	328.55	0.49	5257.44	0.92	0.91		
MEAN	532.73	527.74	243.74	0.46	4792.40	0.92	0.91	0.91	1.47
HUB	446.46	483.55	88.04	0.42	4980.76	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.19	1.17	7.93	582.43	1.05	559.11	512.20	0.06
MEAN	9.07	1.16	7.76	580.03	1.04	555.71	511.27	0.07
HUB	9.12	1.16	7.60	581.00	1.05	552.51	511.66	0.07

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.11	35.47	31.50	3.97	0.93	0.39	1.40
MEAN	31.69	27.51	23.50	4.01	0.93	0.38	1.62
HUB	37.01	10.49	6.50	3.99	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	594.9626	290.6171	519.1553	1144.6168	0.5198	-0.1223	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1141	7.5982	552.7083	511.6854	0.0711	29.2396	32.4000	3.1604

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	514.1615	115.3114	501.0642	1152.0494	0.4463	0.1349	2.2705

```
   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.0974     7.9486   559.9101   511.6302   432.2457     0.0223     0.3190

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   509.9658     0.0000   509.9658  1152.3822     0.4425     0.2289     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.9452   560.2574   511.5760     0.0000     0.0600     0.0400     0.1325

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8773     9.0732     1.1564   581.1542    25.8879   250.5675     1.9424

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 161092.875       0.437     524.653  550260.813   0.446627E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.414   EfDer =  1.000    SH =  0.446627E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     57.632    3683.296       9.073     581.154       1.000       1.000       0.980
 W Kg/sec =  26.196  Wdry =  57.629  WH2O = 0.003  lbm/sec   H2O =   0.028g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     98.834    3479.759       1.381       0.249      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  87313.414   45220.121       1.761     509.668     289.342     384.739       1.330

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   411.15    -0.14   411.15     0.35     0.62   556.30
 MEAN   15.91     0.00    -0.02   411.15    -0.14   411.15     0.35     0.57
 HUB    13.07     0.00    -0.02   411.15    -0.14   411.15     0.35     0.51

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    55.08    47.36     7.72   588.86   718.31     8.33   567.57   511.56     0.05
 MEAN   51.21    44.80     6.41   511.49   656.36     8.33   567.57   511.56     0.05
 HUB    45.63    38.84     6.79   420.11   587.93     8.33   567.57   511.56     0.05

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   500.65   278.88   415.78  1179.41     0.42     2.05     1.78     7.43
 MEAN   15.50   505.50   277.34   422.62  1175.34     0.43     2.13     1.86     5.75
 HUB    12.59   539.17   325.49   429.85  1171.44     0.46     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   576.64   511.41   297.76     0.43  5005.68     0.92     0.91
 MEAN  498.14   476.82   220.80     0.41  4300.39     0.92     0.91     0.91     1.51
 HUB   404.68   437.08    79.19     0.37  4099.71     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.49     1.16     9.28   607.01     1.04   586.87   521.21     0.03
 MEAN   10.28     1.13     9.06   603.36     1.04   582.83   519.90     0.04
 HUB    10.22     1.13     8.85   602.33     1.04   578.97   519.53     0.04

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    33.85    35.61    31.50     4.11     0.93     0.43     1.40
 MEAN   33.27    27.58    23.50     4.08     0.93     0.40     1.64
 HUB    37.13    10.44     6.50     3.94     0.93     0.39     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   563.3907   282.4274   487.4872  1171.1617     0.4811    -0.2015     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.3016     8.8106   578.7369   520.1708     0.0384    30.0860    33.0000     2.9140
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   493.1234   112.6051   480.0945  1177.1814     0.4189     0.0442     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500    10.2755     9.1211   584.7000   520.1050   410.5396     0.0407     0.3336

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   477.5830     0.0000   477.5830  1178.3774     0.4053     0.2553     0.5109

Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     9.1912   585.9135   520.1062     0.0000     0.0600     0.0395     0.0998

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.8800    10.2770     1.1327   604.2328    23.0793   257.2093     1.9939

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 143678.422       0.432     467.937  558447.875   0.446627E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3200   Tt4 =   604.2328   T1  =   457.7392

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    911240.06   2967.7598    186.6139      2.4098      0.8583      4.4894      1.3200     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 76.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.818   EfDer =  0.996    SH =  0.445566E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     56.680    3652.568       4.265     457.739       1.000       1.000       0.980
  W Kg/sec =  25.764  Wdry =  56.678  WH2O = 0.003  lbm/sec   H2O =   0.017g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     183.532   3888.184       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 147147.531   44473.305       1.548     831.557     537.217     619.754       1.154

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   424.69    -0.15   424.69     0.41     0.76   699.97
 MEAN    17.06     0.00    -0.02   424.69    -0.15   424.69     0.41     0.67
 HUB     12.51     0.00    -0.02   424.69    -0.15   424.69     0.41     0.57

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.15    50.47     6.68   657.57   782.92     3.80   443.23   448.32     2.77
 MEAN    52.02    47.20     4.82   543.79   690.09     3.80   443.23   448.32     2.77
 HUB     43.21    38.62     4.59   398.75   582.65     3.80   443.23   448.32     2.77

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   656.16   357.87   549.98  1045.52      0.63     7.29     6.52    16.04
 MEAN    18.04   693.10   401.82   564.74  1040.17      0.67     7.43     6.80    12.53
 HUB     15.00   803.06   537.44   596.71  1029.79      0.78     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    657.57   626.34   299.70     0.60  7385.92      0.92     0.91
 MEAN   574.89   590.66   173.07     0.57  7249.73      0.92     0.91     0.91     1.29
 HUB    478.12   599.65    59.32     0.58  8063.36      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.55     1.30     4.27   495.61     1.08   460.98   472.75     1.31
 MEAN     5.52     1.30     4.11   494.91     1.08   456.27   472.42     1.58
 HUB      5.68     1.33     3.82   499.09     1.09   447.21   475.05     2.28

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.05    28.59    24.20     4.39     0.93     0.33     1.80
 MEAN    35.43    17.04    12.70     4.34     0.92     0.28     2.22
 HUB     42.01    -5.68    -9.30     3.62     0.92     0.14     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.996       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   736.6521   401.0393   617.9189  1036.3025     0.7108    -0.0818     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.5691     3.9909   452.8881   473.3983     1.8046    32.9842    35.4000     2.4158

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   584.9686   143.1012   567.1951  1054.5845     0.5547     0.2893     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.5397     4.5060   469.0141   473.0845   554.9116     0.0294     0.4055

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   581.3394     0.0000   581.3394  1054.9503     0.5511     0.3214     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.4982   469.3570   473.0289     0.0000     0.0600     0.0453     0.2842
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8683     5.5156     1.2933   496.5379    38.7992   224.5107     1.7404

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 241205.828       0.558     772.594  636487.313   0.446919E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.757   EfDer =  0.999    SH =  0.446919E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     56.680    3652.568       5.516     496.538       1.000       1.000       0.980
 W Kg/sec =  25.764  Wdry =  56.678  WH2O = 0.003  lbm/sec   H2O =   0.019g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    147.800    3733.191       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 127439.328   44473.305       1.365     590.487     432.633     468.502       1.083

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   517.97    -0.18   517.97     0.49     0.79   669.46
 MEAN   18.08     0.00    -0.02   517.97    -0.18   517.97     0.49     0.73
 HUB    15.21     0.00    -0.02   517.97    -0.18   517.97     0.49     0.67

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    51.67    46.36     5.31   655.02   835.21     4.70   474.96   472.98     0.77
 MEAN   48.06    42.30     5.76   576.24   774.95     4.70   474.96   472.98     0.77
 HUB    43.12    37.84     5.28   484.81   709.58     4.70   474.96   472.98     0.77

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   587.32   286.87   512.49  1087.58     0.54     2.33     2.04     9.02
 MEAN   18.01   603.41   303.30   521.64  1083.68     0.56     2.40     2.13     7.35
 HUB    15.22   657.64   387.34   531.47  1080.09     0.61     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   650.88   628.61   364.01     0.58  5861.65     0.92     0.91
 MEAN  574.06   587.72   270.76     0.54  5465.70     0.92     0.91     0.91     1.43
 HUB   485.23   540.41    97.89     0.50  5899.17     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.70     1.22     5.51   526.59     1.06   498.85   488.62     0.34
 MEAN    6.62     1.20     5.37   524.56     1.06   495.28   487.65     0.38
 HUB     6.71     1.22     5.24   526.78     1.06   492.00   488.76     0.42

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    29.24    35.38    31.50     3.88     0.93     0.37     1.40
 MEAN   30.18    27.43    23.50     3.93     0.92     0.36     1.63
 HUB    36.09    10.44     6.50     3.94     0.92     0.38     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.999       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   676.3335   304.1543   604.0837  1076.9810     0.6280    -0.1916     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   6.6645     5.1252   489.1938   488.3652     0.4600    26.7251    30.6000     3.8749

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   569.7307   120.7869   556.7796  1088.6799     0.5233     0.1134     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     6.6410     5.5228   499.8750   488.2326   491.5697     0.0281     0.2784

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
  17.8235   597.1569     0.0000   597.1569  1085.8579     0.5499     0.1803     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4028	497.3038	488.1991	0.0000	0.0600	0.0447	0.0213

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8710	6.6193	1.2001	525.9776	29.4401	256.9404	1.9918

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
183074.469	0.432	586.397	572326.500	0.446919E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.993 EfDer = 0.999 SH = 0.446919E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.680	3652.568	6.619	525.978	1.000	1.000	0.980

W Kg/sec = 25.764 Wdry = 56.678 WH2O = 0.003 lbm/sec H2O = 0.022g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
126.754	3627.211	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
110204.938	44473.305	1.470	545.479	371.040	424.468	1.144

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	484.88	-0.17	484.88	0.44	0.73	635.26
MEAN	17.74	0.00	-0.02	484.88	-0.17	484.88	0.44	0.68	
HUB	15.05	0.00	-0.02	484.88	-0.17	484.88	0.44	0.62	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.85	46.36	6.49	639.72	802.85	5.80	507.07	488.14	0.26
MEAN	49.39	43.40	5.99	565.41	744.97	5.80	507.07	488.14	0.26
HUB	44.70	38.84	5.86	479.71	682.20	5.80	507.07	488.14	0.26

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	562.65	286.88	484.02	1120.62	0.50	2.26	1.98	8.75
MEAN	17.51	576.94	302.00	491.59	1117.08	0.52	2.34	2.07	6.78
HUB	14.85	628.04	380.36	499.76	1113.79	0.56	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	631.44	594.14	344.56	0.53	5686.40	0.92	0.91		
MEAN	558.02	554.26	256.02	0.50	5289.93	0.92	0.91	0.91	1.45
HUB	473.34	508.34	92.98	0.46	5650.79	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.92	1.20	6.68	555.12	1.06	529.67	501.34	0.13
MEAN	7.82	1.18	6.53	553.09	1.05	526.33	500.48	0.15
HUB	7.91	1.19	6.39	554.94	1.06	523.23	501.29	0.16

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.66	35.45	31.50	3.95	0.93	0.39	1.40
MEAN	31.56	27.51	23.50	4.01	0.92	0.38	1.62
HUB	37.27	10.54	6.50	4.04	0.92	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	640.4722	303.9812	563.7376	1111.8149	0.5761	-0.1736	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8690	6.3011	521.4092	501.0269	0.1663	28.3346	31.5000	3.1654

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	543.9290	118.6544	530.8294	1121.5768	0.4850	0.1196	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8492	6.6961	530.6010	500.9436	451.3937	0.0247	0.3036

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	555.3951	0.0000	555.3951	1120.4846	0.4957	0.2113	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6324	529.5901	500.9001	0.0000	0.0600	0.0400	0.0724

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8775	7.8286	1.1827	554.3857	28.4086	245.3591	1.9020

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
176712.109	0.443	566.018	546577.813	0.446919E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.371 EfDer = 1.000 SH = 0.446919E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.680	3652.568	7.829	554.386	1.000	1.000	0.980

W Kg/sec = 25.764 Wdry = 56.678 WH2O = 0.003 lbm/sec H2O = 0.025g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
110.031	3533.055	1.381	0.249	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
96525.078	44473.305	1.594	513.330	322.102	395.845	1.229

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	451.29	-0.16	451.29	0.40	0.67	593.80
MEAN	16.97	0.00	-0.02	451.29	-0.16	451.29	0.40	0.62	
HUB	14.32	0.00	-0.02	451.29	-0.16	451.29	0.40	0.57	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.69	46.36	7.33	613.91	762.06	7.02	538.02	500.87	0.11
MEAN	50.17	43.80	6.37	540.94	704.59	7.02	538.02	500.87	0.11
HUB	45.34	37.84	7.50	456.45	641.99	7.02	538.02	500.87	0.11

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	532.10	279.32	452.89	1150.81	0.46	2.16	1.89	8.34
MEAN	16.57	543.00	289.07	459.66	1147.29	0.47	2.24	1.97	6.35
HUB	13.89	587.39	356.38	466.92	1143.96	0.51	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	601.79	555.97	322.47	0.48	5276.54	0.92	0.91		
MEAN	528.29	518.18	239.22	0.45	4793.64	0.92	0.91	0.91	1.48
HUB	442.74	474.84	86.36	0.42	4952.36	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.17	1.17	7.93	581.42	1.05	558.67	511.87	0.06
MEAN	9.04	1.15	7.77	578.95	1.04	555.25	510.91	0.07
HUB	9.08	1.16	7.60	579.76	1.05	552.03	511.23	0.07

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.66	35.45	31.50	3.95	0.93	0.40	1.40
MEAN	32.16	27.49	23.50	3.99	0.93	0.39	1.62
HUB	37.35	10.48	6.50	3.98	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	586.5465	290.6950	509.4440	1144.2947	0.5126	-0.1199	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.0848	7.6109	552.3964	511.3145	0.0720	29.7096	32.4000	2.6904

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	504.4651	113.1368	491.6147	1151.7234	0.4380	0.1454	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.0696     7.9631   559.5928   511.2627   432.2457     0.0215     0.3257

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   500.3376     0.0000   500.3376  1152.0437     0.4343     0.2367     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.9597   559.9280   511.2103     0.0000     0.0600     0.0391     0.1429

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8790     9.0462     1.1555   580.0432    25.6581   247.7817     1.9208

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 159662.609       0.441     511.407  540208.938   0.446919E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.673   EfDer =  1.000    SH =  0.446919E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     56.680    3652.568       9.046     580.043       1.000       1.000       0.980
 W Kg/sec =  25.764  Wdry =  56.678  WH2O = 0.003  lbm/sec   H2O =   0.028g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     97.399    3454.032       1.381       0.249      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  85786.469   44473.305       1.787     509.668     285.141     384.739       1.349

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   403.96    -0.14   403.96     0.35     0.61   552.19
 MEAN    15.91     0.00    -0.02   403.96    -0.14   403.96     0.35     0.56
 HUB     13.07     0.00    -0.02   403.96    -0.14   403.96     0.35     0.50

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.33    47.36     7.97   583.94   710.17      8.33   566.93   511.20     0.05
 MEAN    51.47    44.80     6.67   507.22   648.54      8.33   566.93   511.20     0.05
 HUB     45.89    38.84     7.05   416.60   580.40      8.33   566.93   511.20     0.05

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   495.05   279.16   408.83  1178.55      0.42     2.05     1.78     7.43
 MEAN    15.50   499.38   277.00   415.52  1174.51      0.43     2.13     1.86     5.75
 HUB     12.59   532.20   323.52   422.58  1170.62      0.45     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    571.83   502.79   292.67     0.43  5010.74      0.92     0.91
 MEAN   493.98   468.76   216.98     0.40  4295.03      0.92     0.91     0.91     1.52
 HUB    401.30   429.68    77.78     0.37  4074.97      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.45     1.15     9.27   605.71     1.04   586.02   520.82     0.03
 MEAN    10.24     1.13     9.05   602.04     1.04   582.00   519.49     0.04
 HUB     10.17     1.12     8.84   600.91     1.04   578.16   519.08     0.04

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.33    35.60    31.50     4.10     0.93     0.43     1.40
 MEAN    33.69    27.57    23.50     4.07     0.93     0.41     1.64
 HUB     37.44    10.43     6.50     3.93     0.93     0.40     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   555.8102   282.0776   478.9126  1170.4913     0.4749    -0.1988     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.2607     8.8101   578.0720   519.7556     0.0391    30.4979    33.0000     2.5021
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   484.3105   110.5927   471.5145  1176.5245     0.4116     0.0555     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.2368     9.1235   584.0456   519.6945   410.5396     0.0394     0.3394

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   469.1897     0.0000   469.1897  1177.6672     0.3984     0.2619     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.1900   585.2054   519.6943     0.0000     0.0600     0.0388     0.1096

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8812    10.2377     1.1317   602.8867    22.8442   254.7746     1.9750

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 142213.109       0.435     455.516  548870.375   0.446935E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3171   Tt4 =   602.8867   T1  =   457.7391

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    902868.19   2891.9312    183.5320      2.4006      0.8620      4.8181      1.3171     37.3740
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100µm, ISA +36R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 100%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 2.843   EfDer =  0.984    SH =  0.880315E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     61.724    3973.534       4.265     477.920       1.000       1.000       0.980
  W Kg/sec =  28.056  Wdry =  61.718  WH2O = 0.005  lbm/sec   H2O =   0.030g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     204.226    4139.589       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 171776.547   48429.875       1.391     831.557     597.805     619.754       1.037

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   495.77    -0.17   495.77     0.48     0.84   745.23
 MEAN    17.06     0.00    -0.02   495.77    -0.17   495.77     0.48     0.74
 HUB     12.51     0.00    -0.02   495.77    -0.17   495.77     0.48     0.63

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.28     50.47     4.81   715.36   870.50      3.66   458.15   460.87     2.53
 MEAN    50.04     47.20     2.84   591.57   771.98      3.66   458.15   460.87     2.53
 HUB     41.20     38.62     2.58   433.79   658.87      3.66   458.15   460.87     2.53

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   743.62   360.69   650.29  1061.26      0.70     7.29     6.52    16.04
 MEAN    18.04   789.72   420.31   668.57  1055.77      0.75     7.43     6.80    12.53
 HUB     15.00   933.71   592.64   721.52  1041.45      0.90     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    715.36   740.72   354.67     0.70  7444.56      0.92     0.90
 MEAN   625.41   699.33   205.10     0.66  7583.70      0.92     0.90     0.90     1.21
 HUB    520.13   725.15    72.50     0.70  8891.72      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.60     1.31     4.05   519.44     1.09   474.97   483.69     1.31
 MEAN     5.63     1.32     3.90   520.22     1.09   470.06   484.22     1.57
 HUB      5.89     1.38     3.52   527.52     1.10   457.40   488.45     2.53

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     29.02    28.61    24.20     4.41     0.93     0.26     1.80
 MEAN    32.16    17.05    12.70     4.35     0.91     0.22     2.22
 HUB     39.40    -5.74    -9.30     3.56     0.91     0.06     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.984       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   854.1772   419.4975   744.0702  1048.6151     0.8146    -0.1082     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.6898     3.6955   463.7095   485.5049     1.9823    29.4138    35.4000     5.9862

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   696.0285   170.2698   674.8806  1070.6714     0.6501     0.2272     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.6286     4.2509   483.4301   484.7450   554.9116     0.0424     0.3580

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   698.3840     0.0000   698.3840  1070.3573     0.6525     0.2518     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.1976	483.1710	484.5894	0.0000	0.0600	0.0740	0.1990

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8217	5.5691	1.3059	522.3939	44.4745	238.1942	1.8465

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
276508.125	0.540	964.479	688685.438	0.885364E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc = 3.448 EfDer = 0.989 SH = 0.885602E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
61.724	3973.534	5.569	522.394	1.000	1.000	0.980

W Kg/sec = 28.056 Wdry = 61.718 WH2O = 0.005 lbm/sec H2O = 0.035g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
163.502	3959.461	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
150306.984	48429.859	1.234	590.487	478.608	468.502	0.979

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	610.91	-0.21	610.91	0.57	0.87	710.04
MEAN	18.08	0.00	-0.02	610.91	-0.21	610.91	0.57	0.81	
HUB	15.21	0.00	-0.02	610.91	-0.21	610.91	0.57	0.75	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.40	46.36	3.04	712.58	938.77	4.49	492.38	484.44	0.70
MEAN	45.75	42.30	3.45	626.87	875.47	4.49	492.38	484.44	0.70
HUB	40.82	37.84	2.98	527.42	807.22	4.49	492.38	484.44	0.70

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	662.05	280.35	599.76	1109.42	0.60	2.33	2.04	9.02
MEAN	18.01	682.29	306.51	609.57	1105.86	0.62	2.40	2.13	7.35
HUB	15.22	744.87	412.21	620.42	1102.66	0.68	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	708.08	736.66	427.72	0.66	5729.15	0.92	0.90		
MEAN	624.51	687.53	318.00	0.62	5524.03	0.92	0.90	0.90	1.37
HUB	527.87	631.10	115.66	0.57	6278.26	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.77	1.22	5.34	554.34	1.06	519.10	498.49	0.30
MEAN	6.72	1.21	5.22	553.20	1.06	515.77	498.04	0.33
HUB	6.89	1.24	5.10	557.41	1.07	512.79	499.84	0.36

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	25.05	35.49	31.50	3.99	0.93	0.32	1.40
MEAN	26.69	27.55	23.50	4.05	0.92	0.32	1.63
HUB	33.60	10.56	6.50	4.06	0.92	0.35	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.989	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	782.9727	307.3702	720.1179	1094.9711	0.7151	-0.2381	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7793	4.8400	505.6950	498.8881	0.4501	23.1144	30.6000	7.4856

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	677.1002	143.5500	661.7084	1108.3567	0.6109	0.0188	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7284	5.2454	518.1204	498.5925	491.5697	0.0422	0.2194

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	721.4407	0.0000	721.4407	1102.9910	0.6541	0.0955	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0252	513.1395	498.5056	0.0000	0.0600	0.0756	-0.1206

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8223	6.6758	1.1987	554.9827	32.5891	281.2424	2.1802

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
202699.109	0.404	707.028	623730.750	0.886136E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 3.820 EfDer = 0.991 SH = 0.886136E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
61.724	3973.534	6.676	554.983	1.000	1.000	0.980

W Kg/sec = 28.056 Wdry = 61.718 WH2O = 0.005 lbm/sec H2O = 0.041g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
140.589	3841.452	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
129409.117	48429.855	1.325	545.479	411.555	424.468	1.031

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	569.37	-0.20	569.37	0.51	0.80	672.79
MEAN	17.74	0.00	-0.02	569.37	-0.20	569.37	0.51	0.75	
HUB	15.05	0.00	-0.02	569.37	-0.20	569.37	0.51	0.69	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	50.72	46.36	4.36	695.94	899.33	5.61	528.92	498.36	0.23
MEAN	47.22	43.40	3.82	615.09	838.31	5.61	528.92	498.36	0.23
HUB	42.52	38.84	3.68	521.87	772.49	5.61	528.92	498.36	0.23

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	631.84	283.47	564.68	1146.26	0.55	2.26	1.98	8.75
MEAN	17.51	650.14	307.32	572.91	1142.95	0.57	2.34	2.07	6.78
HUB	14.85	709.36	405.50	582.03	1139.94	0.62	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	686.92	694.00	403.45	0.61	5619.47	0.92	0.91		
MEAN	607.05	646.58	299.73	0.57	5383.61	0.92	0.91	0.91	1.40
HUB	514.93	592.23	109.44	0.52	6024.58	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.00	1.20	6.52	586.31	1.06	554.22	510.53	0.12
MEAN	7.94	1.19	6.39	584.99	1.05	551.02	510.05	0.13
HUB	8.10	1.21	6.26	588.57	1.06	548.12	511.41	0.13

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	26.66	35.55	31.50	4.05	0.93	0.34	1.40
MEAN	28.21	27.62	23.50	4.12	0.92	0.34	1.62
HUB	34.86	10.65	6.50	4.15	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.991	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	733.7472	309.3376	665.3534	1134.9240	0.6465	-0.2060	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9981	6.0587	543.3569	510.6733	0.1512	24.9348	31.5000	6.5652

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	641.8940	140.0248	626.4352	1145.4926	0.5604	0.0332	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.9570	6.4460	553.5093	510.5007	451.3937	0.0353	0.2527

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	659.6068	0.0000	659.6068	1143.5475	0.5768	0.1425	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.3351	551.6613	510.4047	0.0000	0.0600	0.0608	-0.0352

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8441	7.9157	1.1857	586.6240	31.6417	266.7160	2.0676

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
196887.391	0.417	686.757	589520.125	0.886657E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 4.406 EfDer = 0.995 SH = 0.886657E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
61.724	3973.534	7.916	586.624	1.000	1.000	0.980

W Kg/sec = 28.056 Wdry = 61.718 WH2O = 0.005 lbm/sec H2O = 0.047g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
121.900	3736.416	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
112548.188	48429.859	1.438	513.330	356.868	395.845	1.109

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	526.20	-0.18	526.20	0.45	0.74	627.98
MEAN	16.97	0.00	-0.02	526.20	-0.18	526.20	0.45	0.68	
HUB	14.32	0.00	-0.02	526.20	-0.18	526.20	0.45	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.77	46.36	5.41	667.85	850.39	6.88	564.38	510.34	0.09
MEAN	48.21	43.80	4.41	588.47	789.56	6.88	564.38	510.34	0.09
HUB	43.35	37.84	5.51	496.56	723.63	6.88	564.38	510.34	0.09

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	594.78	279.70	524.91	1180.22	0.50	2.16	1.89	8.34
MEAN	16.57	609.54	296.44	532.60	1176.72	0.52	2.24	1.97	6.35
HUB	13.89	661.49	380.70	540.96	1173.47	0.56	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	654.68	645.08	374.97	0.55	5284.26	0.92	0.91		
MEAN	574.71	600.91	278.26	0.51	4916.31	0.92	0.91	0.91	1.42
HUB	481.64	550.29	100.94	0.47	5290.54	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.31	1.18	7.84	616.07	1.05	587.64	520.75	0.05
MEAN	9.20	1.16	7.68	614.02	1.05	584.17	520.06	0.06
HUB	9.31	1.18	7.52	616.10	1.05	580.95	520.79	0.06

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	28.05	35.54	31.50	4.04	0.93	0.36	1.40
MEAN	29.10	27.59	23.50	4.09	0.92	0.35	1.62
HUB	35.14	10.57	6.50	4.07	0.92	0.37	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	664.4677	298.1116	593.8407	1172.3827	0.5668	-0.1373	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.2576	7.4648	579.9320	520.5096	0.0624	26.6569	32.4000	5.7431

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   588.7925   132.0490   573.7941  1180.0614     0.4990     0.0744     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.2275     7.8011   587.5493   520.4080   432.2457     0.0290     0.2827

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   584.1212     0.0000   584.1212  1180.4749     0.4948     0.1853     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.7970   587.9929   520.3339     0.0000     0.0600     0.0477     0.0718

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8615     9.1977     1.1620   615.3956    28.7723   267.0109     2.0699

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 179126.703       0.418     624.806  577248.375   0.887061E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 5.011   EfDer =  0.997    SH =  0.887061E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     61.724    3973.534       9.198     615.395       1.000       1.000       0.980
 W Kg/sec =  28.056  Wdry =  61.718  WH2O = 0.005  lbm/sec   H2O =   0.053g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    107.451    3648.026       1.381       0.249      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  99014.805   48429.859       1.620     509.668     314.595     384.739       1.223

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   466.26    -0.16   466.26     0.39     0.66   583.20
 MEAN    15.91     0.00    -0.02   466.26    -0.16   466.26     0.39     0.61
 HUB     13.07     0.00    -0.02   466.26    -0.16   466.26     0.39     0.55

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.73    47.36     6.37   635.26   788.13     8.29   597.94   520.30     0.04
 MEAN    49.81    44.80     5.01   551.79   722.53     8.29   597.94   520.30     0.04
 HUB     44.20    38.84     5.36   453.21   650.34     8.29   597.94   520.30     0.04

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   549.02   285.38   469.02  1211.86      0.45     2.05     1.78     7.43
 MEAN    15.50   556.99   287.48   477.06  1207.54      0.46     2.13     1.86     5.75
 HUB     12.59   596.56   346.56   485.56  1203.43      0.50     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    622.08   577.36   336.70     0.48  5122.69      0.92     0.91
 MEAN   537.39   538.56   249.91     0.45  4457.80      0.92     0.91     0.91     1.47
 HUB    436.57   493.84    90.00     0.41  4365.35      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.69     1.16     9.30   643.92     1.05   619.72   529.70     0.03
 MEAN    10.49     1.14     9.08   640.22     1.04   615.31   528.52     0.03
 HUB     10.46     1.14     8.86   639.70     1.04   611.13   528.36     0.03

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.32    35.67    31.50     4.17     0.93     0.40     1.40
 MEAN    31.07    27.65    23.50     4.15     0.92     0.37     1.64
 HUB     35.52    10.50     6.50     4.00     0.92     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.997       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   625.9498   292.7509   553.2722  1202.0835     0.5207    -0.2179     2.0437
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     Pt3         Ps3        Ts3        TwetBulb3   RH3      FloAlpha3   VaneAlpha3    Incid3
    10.5150      8.7611    609.8292    528.8074     0.0335    27.8845    33.0000      5.1155

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG        Cth         Cuth        Cmth       Aoth          Machth     cp 2-Th     Stat Chord
    15.2185    560.8207    128.0639    546.0032   1208.1897     0.4642    -0.0210      2.1315

    BlockageTh  PtTh       PsTh       TsTh       TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     10.4701     9.0500    616.0329    528.6889   410.5396     0.0507     0.3034

     VANED DIFFUSER EXIT:
    R4         C4          Cu4        Cm4        Ao4           Mach4      cp 3-4   Stator Gap
    14.7013    541.9097     0.0000    541.9097   1209.8011     0.4479     0.2196     0.5109

    Blockage4   Ps4       Ts4        TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.1463    617.7100   528.7025      0.0000     0.0600     0.0455     0.0448

     STAGE EXIT CONDITIONS, STAGE             5
     Eff4       Pt4          PR4       Tt2avg      Del T     Ns          Ns nondim
     0.8691     10.4778      1.1392    641.2812    25.8864   270.9812     2.1006

Del Enthalpy   Del_H/U^2    GHP       Reynolds#        SH
 161257.984       0.417     562.479  581103.375   0.887589E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3418   Tt4 =    641.2812   T1  =   477.9197

    OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP         MassFloS1cor   OPR         Efficiency  Rotor1Inc     TR       AxHubLen
    1016479.31   3545.5488    204.2262      2.4569      0.8233      2.8431      1.3418     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 84.0%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 3.952   EfDer =  0.992    SH =  0.882326E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     58.027    3823.044       4.265     477.920       1.000       1.000       0.980
  W Kg/sec =  26.376  Wdry =  58.022  WH2O = 0.005  lbm/sec   H2O =   0.031g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     191.994    3982.810       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 158876.781   45529.117       1.480     831.557     562.001     619.754       1.103

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   458.54    -0.16   458.54     0.44     0.79   717.01
 MEAN    17.06     0.00    -0.02   458.54    -0.16   458.54     0.44     0.70
 HUB     12.51     0.00    -0.02   458.54    -0.16   458.54     0.44     0.59

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.33    50.47     5.86   688.27   827.16      3.74   461.01   460.82     2.27
 MEAN    51.15    47.20     3.95   569.17   731.02      3.74   461.01   460.82     2.27
 HUB     42.32    38.62     3.70   417.36   620.15      3.74   461.01   460.82     2.27

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   698.29   363.05   596.49  1065.66      0.66     7.29     6.52    16.04
 MEAN    18.04   739.37   413.81   612.72  1060.20      0.70     7.43     6.80    12.53
 HUB     15.00   862.74   565.37   651.68  1048.46      0.82     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    688.27   679.39   325.22     0.64  7492.91      0.92     0.91
 MEAN   601.72   640.89   187.92     0.60  7466.12      0.92     0.91     0.91     1.26
 HUB    500.44   654.90    64.93     0.62  8482.52      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.57     1.31     4.19   518.13     1.08   478.91   482.97     1.15
 MEAN     5.56     1.30     4.03   517.99     1.08   474.02   483.02     1.36
 HUB      5.76     1.35     3.71   523.44     1.10   463.58   486.12     2.01

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.33    28.60    24.20     4.40     0.93     0.30     1.80
 MEAN    34.03    17.05    12.70     4.35     0.92     0.25     2.22
 HUB     40.94    -5.69    -9.30     3.61     0.92     0.11     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.992       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   790.5140   413.0029   674.0482  1055.2361     0.7491    -0.0909     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.6129     3.8837   469.5922   484.0446     1.5996    31.4966    35.4000     3.9034

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   635.5350   155.4713   616.2251  1075.0151     0.5912     0.2636     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5739     4.4123   487.3688   483.5244   554.9116     0.0336     0.3859

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   633.0973     0.0000   633.0973  1075.2677     0.5888     0.2947     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.3933   487.6213   483.4289     0.0000     0.0600     0.0543     0.2521
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8535     5.5396     1.2990   519.8525    41.9333   230.3351     1.7855

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 260721.453       0.550     854.944  636967.750   0.888243E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 4.796   EfDer =  0.996    SH =  0.889214E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     58.027    3823.044       5.540     519.852       1.000       1.000       0.980
 W Kg/sec =  26.376  Wdry =  58.022  WH2O = 0.005  lbm/sec   H2O =   0.036g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    154.152    3818.804       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 137956.547   45529.102       1.309     590.487     451.239     468.502       1.038

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   560.72    -0.19   560.72     0.52     0.82   684.82
 MEAN    18.08     0.00    -0.02   560.72    -0.19   560.72     0.52     0.76
 HUB     15.21     0.00    -0.02   560.72    -0.19   560.72     0.52     0.70

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     50.73    46.36     4.37   685.60   885.84     4.62   494.57   483.33     0.66
 MEAN    47.10    42.30     4.80   603.13   823.65     4.62   494.57   483.33     0.66
 HUB     42.16    37.84     4.32   507.44   756.37     4.62   494.57   483.33     0.66

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   623.52   287.76    553.15  1110.53      0.56     2.33     2.04     9.02
 MEAN    18.01   641.61   308.19    562.74  1106.69      0.58     2.40     2.13     7.35
 HUB     15.22   699.94   401.82    573.11  1103.20      0.63     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    681.26   678.84   393.50     0.61  5879.93      0.92     0.91
 MEAN   600.85   634.29   292.66     0.57  5554.00      0.92     0.91     0.91     1.40
 HUB    507.88   582.84   106.05     0.53  6119.90      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.73     1.22     5.45   551.40     1.06   520.14   497.46     0.30
 MEAN     6.66     1.20     5.32   549.65     1.06   516.55   496.74     0.33
 HUB      6.78     1.22     5.19   552.69     1.06   513.29   498.08     0.37

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     27.48    35.43    31.50     3.93     0.93     0.35     1.40
 MEAN    28.71    27.48    23.50     3.98     0.92     0.34     1.63
 HUB     35.04    10.48     6.50     3.98     0.92     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.996       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   725.1463   309.0564  655.9888  1098.5085     0.6601    -0.2079     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7125     5.0273   508.9706   497.4782     0.4150    25.2266    30.6000     5.3734

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   618.0314  131.0271  603.9824  1110.9290     0.5563     0.0766     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6805     5.4277   520.5363   497.2666   491.5697     0.0328     0.2553

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   650.8602     0.0000   650.8602  1107.3284     0.5878     0.1487     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.2778	517.1910	497.2161	0.0000	0.0600	0.0546	-0.0300

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8562	6.6497	1.2004	551.2462	31.3940	266.5990	2.0667

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
195269.063	0.421	640.316	574311.000	0.889736E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.105 EfDer = 0.997 SH = 0.889736E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.027	3823.044	6.650	551.246	1.000	1.000	0.980

W Kg/sec = 26.376 Wdry = 58.022 WH2O = 0.005 lbm/sec H2O = 0.042g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
132.238	3708.469	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
119014.297	45529.102	1.409	545.479	387.110	424.468	1.097

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	523.64	-0.18	523.64	0.47	0.76	649.50
MEAN	17.74	0.00	-0.02	523.64	-0.18	523.64	0.47	0.71	
HUB	15.05	0.00	-0.02	523.64	-0.18	523.64	0.47	0.65	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.98	46.36	5.62	669.58	850.17	5.74	529.21	497.12	0.23
MEAN	48.51	43.40	5.11	591.80	790.34	5.74	529.21	497.12	0.23
HUB	43.81	38.84	4.97	502.10	725.59	5.74	529.21	497.12	0.23

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	596.22	289.24	521.36	1145.44	0.52	2.26	1.98	8.75
MEAN	17.51	612.38	307.91	529.34	1141.92	0.54	2.34	2.07	6.78
HUB	14.85	667.39	394.93	538.00	1138.68	0.59	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	660.91	640.28	371.67	0.56	5733.45	0.92	0.91		
MEAN	584.06	597.04	276.15	0.52	5393.56	0.92	0.91	0.91	1.43
HUB	495.43	547.31	100.50	0.48	5867.39	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.96	1.20	6.63	582.00	1.06	553.42	509.30	0.12
MEAN	7.88	1.18	6.49	580.17	1.05	550.03	508.63	0.13
HUB	7.99	1.20	6.35	582.72	1.06	546.91	509.61	0.14

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	29.02	35.48	31.50	3.98	0.93	0.37	1.40
MEAN	30.19	27.55	23.50	4.05	0.92	0.36	1.62
HUB	36.28	10.58	6.50	4.08	0.92	0.38	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.997	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	683.8945	309.9259	609.6373	1135.6392	0.6022	-0.1853	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.9295	6.2242	544.0416	509.1829	0.1526	26.9478	31.5000	4.5522

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	588.1247	128.2954	573.9608	1145.8196	0.5133	0.0861	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.9032	6.6178	553.8305	509.0562	451.3937	0.0282	0.2835

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	601.4703	0.0000	601.4703	1144.4724	0.5255	0.1863	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.5419	552.5585	508.9991	0.0000	0.0600	0.0454	0.0338

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8686	7.8781	1.1847	581.6290	30.3832	253.6985	1.9667

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
189056.719	0.433	619.945	546440.375	0.890247E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 5.583 EfDer = 0.999 SH = 0.890247E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.027	3823.044	7.878	581.629	1.000	1.000	0.980

W Kg/sec = 26.376 Wdry = 58.022 WH2O = 0.005 lbm/sec H2O = 0.048g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
114.654	3610.309	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
103886.906	45529.102	1.529	513.330	335.654	395.845	1.179

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	485.71	-0.17	485.71	0.42	0.70	606.79
MEAN	16.97	0.00	-0.02	485.71	-0.17	485.71	0.42	0.65	
HUB	14.32	0.00	-0.02	485.71	-0.17	485.71	0.42	0.59	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.92	46.36	6.56	642.56	805.61	6.99	562.67	508.95	0.10
MEAN	49.38	43.80	5.58	566.18	746.10	6.99	562.67	508.95	0.10
HUB	44.54	37.84	6.70	477.75	681.41	6.99	562.67	508.95	0.10

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	562.72	283.21	486.26	1177.43	0.48	2.16	1.89	8.34
MEAN	16.57	575.32	295.73	493.50	1173.86	0.49	2.24	1.97	6.35
HUB	13.89	623.27	370.36	501.29	1170.50	0.53	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	629.88	597.18	346.67	0.51	5350.24	0.92	0.91		
MEAN	552.94	556.51	257.22	0.47	4904.20	0.92	0.91	0.91	1.45
HUB	463.40	509.85	93.04	0.44	5146.75	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.24	1.17	7.92	610.31	1.05	584.87	519.31	0.06
MEAN	9.12	1.16	7.76	607.92	1.05	581.33	518.48	0.06
HUB	9.19	1.17	7.59	609.22	1.05	578.01	518.95	0.07

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.22	35.49	31.50	3.99	0.93	0.38	1.40
MEAN	30.93	27.53	23.50	4.03	0.92	0.38	1.62
HUB	36.46	10.51	6.50	4.01	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	623.5739	297.3911	548.0901	1170.3517	0.5328	-0.1263	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1706	7.5771	577.9167	518.8914	0.0673	28.4840	32.4000	3.9160

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	542.9168	121.7604	529.0870	1177.9797	0.4609	0.1178	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.1508	7.9254	585.4741	518.8162	432.2457	0.0239	0.3084

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	538.5124	0.0000	538.5124	1178.3361	0.4570	0.2164	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9220	585.8596	518.7531	0.0000	0.0600	0.0418	0.1154

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8738	9.1251	1.1583	609.1505	27.5222	255.1836	1.9782

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
171337.969	0.432	561.842	538244.813	0.890714E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.004 EfDer = 0.999 SH = 0.890714E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
58.027	3823.044	9.125	609.150	1.000	1.000	0.980

W Kg/sec = 26.376 Wdry = 58.022 WH2O = 0.005 lbm/sec H2O = 0.054g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
101.300	3527.810	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
91962.125	45529.102	1.718	509.668	296.583	384.739	1.297

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	433.04	-0.15	433.04	0.36	0.63	563.98
MEAN	15.91	0.00	-0.02	433.04	-0.15	433.04	0.36	0.58	
HUB	13.07	0.00	-0.02	433.04	-0.15	433.04	0.36	0.52	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	54.69	47.36	7.33	611.20	749.18	8.33	594.09	518.73	0.05
MEAN	50.80	44.80	6.00	530.90	685.23	8.33	594.09	518.73	0.05
HUB	45.21	38.84	6.37	436.05	614.65	8.33	594.09	518.73	0.05

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	522.02	285.19	437.23	1206.95	0.43	2.05	1.78	7.43
MEAN	15.50	527.84	284.64	444.52	1202.75	0.44	2.13	1.86	5.75
HUB	12.59	563.70	336.54	452.22	1198.72	0.47	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	598.52	537.91	313.33	0.45	5119.01	0.92	0.91		
MEAN	517.04	501.61	232.40	0.42	4413.54	0.92	0.91	0.91	1.50
HUB	420.03	459.86	83.49	0.38	4239.00	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.56	1.16	9.30	636.58	1.05	614.70	527.96	0.03
MEAN	10.36	1.13	9.09	632.80	1.04	610.42	526.72	0.03
HUB	10.31	1.13	8.87	631.86	1.04	606.35	526.42	0.04

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.11	35.63	31.50	4.13	0.93	0.42	1.40
MEAN	32.63	27.60	23.50	4.10	0.93	0.39	1.64
HUB	36.66	10.46	6.50	3.96	0.93	0.39	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	589.6406	289.8546	513.4786	1198.1595	0.4921	-0.2061	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3818	8.8165	605.8345	526.9896	0.0374	29.4444	33.0000	3.5556

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   519.6331   118.6587   505.9039  1204.3114     0.4315     0.0260     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.3513     9.1233   612.0685   526.9042   410.5396     0.0432     0.3248

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   502.9742     0.0000   502.9742  1205.6270     0.4172     0.2450     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.2001   613.4387   526.9076     0.0000     0.0600     0.0409     0.0842

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8776    10.3542     1.1347   633.7458    24.5961   261.1004     2.0240

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 153207.250       0.428     502.389  545052.313   0.891302E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3261   Tt4 =   633.7458   T1  =   477.9195

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    969592.50   3179.4365    191.9939      2.4279      0.8502      3.9515      1.3261     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 79.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.381   EfDer =  0.994    SH =  0.883078E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     56.732    3775.939       4.265     477.919       1.000       1.000       0.980
 W Kg/sec =  25.787  Wdry =  56.727  WH2O = 0.005  lbm/sec   H2O =   0.031g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    187.708    3933.736       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 154526.594   44512.871       1.513     831.557     549.457     619.754       1.128

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1       CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   445.99    -0.15   445.99      0.43     0.78   708.17
 MEAN    17.06     0.00    -0.02   445.99    -0.15   445.99      0.43     0.69
 HUB     12.51     0.00    -0.02   445.99    -0.15   445.99      0.43     0.58

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     56.74    50.47     6.27   679.79   813.15      3.77   461.92   460.80     2.19
 MEAN    51.58    47.20     4.38   562.15   717.70      3.77   461.92   460.80     2.19
 HUB     42.76    38.62     4.14   412.22   607.42      3.77   461.92   460.80     2.19

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   683.88   364.31   578.76  1067.04      0.64     7.29     6.52    16.04
 MEAN    18.04   723.26   412.06   594.39  1061.58      0.68     7.43     6.80    12.53
 HUB     15.00   840.83   556.95   629.93  1050.46      0.80     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    679.79   659.16   315.47     0.62  7518.95      0.92     0.91
 MEAN   594.31   621.70   182.25     0.59  7434.62      0.92     0.91     0.91     1.27
 HUB    494.27   633.04    62.68     0.60  8356.14      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.56     1.30     4.23   517.77     1.08   480.16   482.77     1.10
 MEAN     5.54     1.30     4.08   517.33     1.08   475.25   482.66     1.31
 HUB      5.72     1.34     3.77   522.21     1.09   465.35   485.44     1.88

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.19    28.59    24.20     4.39     0.93     0.31     1.80
 MEAN    34.73    17.05    12.70     4.35     0.92     0.27     2.22
 HUB     41.48    -5.68    -9.30     3.62     0.92     0.12     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   770.8469   411.2641   651.9715  1057.1647     0.7292    -0.0860     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.5900     3.9400   471.3127   483.6244     1.5048    32.2438    35.4000     3.1562

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   616.0394   150.7020   597.3219  1076.3492     0.5723     0.2766     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5563     4.4614   488.5816   483.1593   554.9116     0.0313     0.3957

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   612.8322     0.0000   612.8322  1076.6766     0.5692     0.3084     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4489   488.9021   483.0787     0.0000     0.0600     0.0493     0.2687
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8616     5.5277     1.2962   519.1025    41.1834   227.4156     1.7629

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 256062.484       0.554     820.925  619527.125   0.889487E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.279   EfDer =  0.998    SH =  0.890501E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     56.732    3775.939       5.528     519.102       1.000       1.000       0.980
 W Kg/sec =  25.787  Wdry =  56.727  WH2O = 0.005  lbm/sec   H2O =   0.036g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    150.926    3774.475       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 133971.781   44512.863       1.337     590.487     441.797     468.502       1.060

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   544.52    -0.19   544.52     0.50     0.80   676.87
 MEAN    18.08     0.00    -0.02   544.52    -0.19   544.52     0.50     0.74
 HUB     15.21     0.00    -0.02   544.52    -0.19   544.52     0.50     0.68

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     51.20     46.36     4.84   677.15   869.07     4.66   495.26   482.99     0.65
 MEAN    47.58     42.30     5.28   595.70   807.21     4.66   495.26   482.99     0.65
 HUB     42.64     37.84     4.80   501.19   740.19     4.66   495.26   482.99     0.65

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   611.39   290.46   537.99  1110.91     0.55     2.33     2.04     9.02
 MEAN    18.01   628.65   309.01   547.46  1106.99     0.57     2.40     2.13     7.35
 HUB     15.22   685.51   398.66   557.67  1103.41     0.62     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    672.87   660.05   382.40     0.59  5935.08     0.92     0.91
 MEAN   593.45   616.95   284.44     0.56  5568.68     0.92     0.91     0.91     1.41
 HUB    501.62   567.09   102.96     0.51  6071.64     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.72     1.22     5.48   550.55     1.06   520.50   497.15     0.30
 MEAN     6.64     1.20     5.35   548.61     1.06   516.83   496.35     0.33
 HUB      6.75     1.22     5.22   551.28     1.06   513.49   497.53     0.36

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.36    35.41    31.50     3.91     0.93     0.36     1.40
 MEAN    29.44    27.45    23.50     3.95     0.92     0.35     1.63
 HUB     35.56    10.46     6.50     3.96     0.92     0.37     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.998       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   707.4097   309.8794   635.9271  1099.5260     0.6434    -0.1993     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   6.6884     5.0795   509.9147   497.0485     0.4054    25.9794    30.6000     4.6206

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   599.4633   127.0905   585.8363  1111.6935     0.5392     0.0954     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     6.6610     5.4785   521.2553   496.8576   491.5697     0.0302     0.2670

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   629.6513     0.0000   629.6513  1108.4867     0.5680     0.1650     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3450	518.2758	496.8160	0.0000	0.0600	0.0492	-0.0032

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8644	6.6353	1.2004	550.1473	31.0451	261.6668	2.0284

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
193099.625	0.427	619.069	557930.375	0.891096E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.553 EfDer = 0.999 SH = 0.891096E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.732	3775.939	6.635	550.147	1.000	1.000	0.980

W Kg/sec = 25.787 Wdry = 56.727 WH2O = 0.005 lbm/sec H2O = 0.042g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
129.438	3666.432	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
115707.914	44512.863	1.440	545.479	378.913	424.468	1.120

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	509.09	-0.18	509.09	0.45	0.75	642.13
MEAN	17.74	0.00	-0.02	509.09	-0.18	509.09	0.45	0.69	
HUB	15.05	0.00	-0.02	509.09	-0.18	509.09	0.45	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.42	46.36	6.06	661.33	834.73	5.77	529.31	496.73	0.23
MEAN	48.95	43.40	5.55	584.51	775.26	5.77	529.31	496.73	0.23
HUB	44.26	38.84	5.42	495.92	710.83	5.77	529.31	496.73	0.23

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	585.15	291.21	507.54	1145.21	0.51	2.26	1.98	8.75
MEAN	17.51	600.53	308.22	515.40	1141.64	0.53	2.34	2.07	6.78
HUB	14.85	654.13	391.68	523.91	1138.33	0.57	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	652.76	623.16	361.56	0.54	5772.35	0.92	0.91		
MEAN	576.86	581.22	268.65	0.51	5398.91	0.92	0.91	0.91	1.44
HUB	489.33	532.93	97.65	0.47	5819.09	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.94	1.20	6.66	580.73	1.06	553.20	508.91	0.12
MEAN	7.85	1.18	6.52	578.75	1.05	549.76	508.17	0.13
HUB	7.95	1.20	6.37	580.97	1.06	546.58	509.05	0.14

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	29.85	35.46	31.50	3.96	0.93	0.38	1.40
MEAN	30.88	27.53	23.50	4.03	0.92	0.37	1.62
HUB	36.78	10.56	6.50	4.06	0.92	0.39	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	668.5695	310.2385	592.2308	1135.8326	0.5886	-0.1791	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8999	6.2663	544.2267	508.7105	0.1530	27.6477	31.5000	3.8523

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	571.3699	124.6405	557.6095	1145.9020	0.4986	0.1033	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8772	6.6608	553.9115	508.5952	451.3937	0.0263	0.2938

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	583.7200	0.0000	583.7200	1144.6887	0.5099	0.1999	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.5929	552.7686	508.5463	0.0000	0.0600	0.0417	0.0547

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8743	7.8557	1.1839	580.1484	30.0016	249.4211	1.9335

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
186681.766	0.438	598.493	531953.063	0.891627E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 5.986 EfDer = 0.999 SH = 0.891627E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.732	3775.939	7.856	580.148	1.000	1.000	0.980

W Kg/sec = 25.787 Wdry = 56.727 WH2O = 0.005 lbm/sec H2O = 0.048g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
112.272	3570.373	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
101155.953	44512.859	1.562	513.330	328.681	395.845	1.204

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	472.94	-0.16	472.94	0.41	0.69	600.07
MEAN	16.97	0.00	-0.02	472.94	-0.16	472.94	0.41	0.63	
HUB	14.32	0.00	-0.02	472.94	-0.16	472.94	0.41	0.58	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.31	46.36	6.95	634.64	791.61	7.01	562.18	508.50	0.10
MEAN	49.79	43.80	5.99	559.21	732.51	7.01	562.18	508.50	0.10
HUB	44.94	37.84	7.10	471.86	668.19	7.01	562.18	508.50	0.10

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	552.80	284.37	474.05	1176.59	0.47	2.16	1.89	8.34
MEAN	16.57	564.65	295.55	481.13	1173.00	0.48	2.24	1.97	6.35
HUB	13.89	611.27	367.15	488.73	1169.62	0.52	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	622.12	582.07	337.75	0.49	5371.96	0.92	0.91		
MEAN	546.13	542.47	250.58	0.46	4901.17	0.92	0.91	0.91	1.46
HUB	457.69	497.05	90.55	0.42	5102.02	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.21	1.17	7.93	608.59	1.05	584.04	518.83	0.06
MEAN	9.08	1.16	7.77	606.10	1.04	580.48	517.97	0.06
HUB	9.14	1.16	7.60	607.16	1.05	577.14	518.35	0.07

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.96	35.47	31.50	3.97	0.93	0.39	1.40
MEAN	31.56	27.51	23.50	4.01	0.92	0.38	1.62
HUB	36.91	10.50	6.50	4.00	0.92	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	610.9291	297.2119	533.7598	1169.7344	0.5223	-0.1230	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1301	7.5988	577.3047	518.3642	0.0688	29.1102	32.4000	3.2898

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	528.6149	118.5529	515.1494	1177.3425	0.4490	0.1321	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.1129	7.9495	584.8394	518.2952	432.2457	0.0226	0.3172

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	524.3044	0.0000	524.3044	1177.6809	0.4452	0.2269	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9462	585.2067	518.2352	0.0000	0.0600	0.0403	0.1296

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8767	9.0884	1.1569	607.2849	27.1372	251.3478	1.9484

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
168939.688	0.436	541.613	524924.063	0.892143E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.346 EfDer = 1.000 SH = 0.892143E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
56.732	3775.939	9.088	607.285	1.000	1.000	0.980

W Kg/sec = 25.787 Wdry = 56.727 WH2O = 0.005 lbm/sec H2O = 0.054g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
99.287	3489.690	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
89726.383	44512.859	1.753	509.668	290.688	384.739	1.324

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	422.52	-0.15	422.52	0.36	0.62	557.89
MEAN	15.91	0.00	-0.02	422.52	-0.15	422.52	0.36	0.57	
HUB	13.07	0.00	-0.02	422.52	-0.15	422.52	0.36	0.51	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.02	47.36	7.66	603.67	736.96	8.33	592.95	518.21	0.05
MEAN	51.15	44.80	6.35	524.35	673.51	8.33	592.95	518.21	0.05
HUB	45.56	38.84	6.72	430.67	603.43	8.33	592.95	518.21	0.05

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	513.60	285.25	427.11	1205.48	0.43	2.05	1.78	7.43
MEAN	15.50	518.70	283.81	434.17	1201.32	0.43	2.13	1.86	5.75
HUB	12.59	553.38	333.47	441.61	1197.32	0.46	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	591.15	525.35	305.90	0.44	5119.96	0.92	0.91		
MEAN	510.67	489.86	226.86	0.41	4400.70	0.92	0.91	0.91	1.51
HUB	414.86	449.05	81.39	0.38	4200.28	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.51	1.16	9.29	634.38	1.04	613.20	527.39	0.03
MEAN	10.30	1.13	9.08	630.57	1.04	608.97	526.13	0.04
HUB	10.24	1.13	8.86	629.51	1.04	604.92	525.79	0.04

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.74	35.61	31.50	4.11	0.93	0.42	1.40
MEAN	33.17	27.59	23.50	4.09	0.93	0.40	1.64
HUB	37.06	10.44	6.50	3.94	0.93	0.39	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	578.3240	289.0150	500.9282	1196.9812	0.4832	-0.2022	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3240	8.8182	604.6375	526.3936	0.0386	29.9832	33.0000	3.0168

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   506.7296   115.7121   493.3412  1203.1403     0.4212     0.0413     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.2971     9.1289   610.8739   526.3164   410.5396     0.0411     0.3323

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   490.7122     0.0000   490.7122  1204.3737     0.4074     0.2537     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.2002   612.1589   526.3174     0.0000     0.0600     0.0397     0.0974

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8796    10.2989     1.1332   631.4884    24.2042   257.8208     1.9986

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 150762.609       0.431     483.338  532497.438   0.892853E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3213   Tt4 =   631.4884   T1  =   477.9195

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    955546.19   3063.4370    187.7085      2.4150      0.8569      4.3807      1.3213     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 76.8%  07-05-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 4.712   EfDer =  0.996    SH =  0.883566E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     55.789    3744.068       4.265     477.919       1.000       1.000       0.980
  W Kg/sec =  25.359  Wdry =  55.784  WH2O = 0.005  lbm/sec   H2O =   0.031g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     184.591    3900.533       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 151410.797   43773.602       1.539     831.557     540.332     619.754       1.147

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   436.99    -0.15   436.99     0.42     0.77   702.20
 MEAN    17.06     0.00    -0.02   436.99    -0.15   436.99     0.42     0.68
 HUB     12.51     0.00    -0.02   436.99    -0.15   436.99     0.42     0.57

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.05    50.47     6.58   674.05   803.43     3.79   462.56   460.79     2.14
 MEAN    51.91    47.20     4.71   557.41   708.40     3.79   462.56   460.79     2.14
 HUB     43.10    38.62     4.48   408.74   598.46     3.79   462.56   460.79     2.14

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   673.87   365.52   566.12  1068.02      0.63     7.29     6.52    16.04
 MEAN    18.04   712.02   411.09   581.36  1062.55      0.67     7.43     6.80    12.53
 HUB     15.00   825.67   551.21   614.73  1051.81      0.78     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    674.05   644.73   308.53     0.60  7543.80      0.92     0.91
 MEAN   589.29   608.06   178.20     0.57  7417.01      0.92     0.91     0.91     1.29
 HUB    490.10   617.76    61.11     0.59  8270.04      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.55     1.30     4.26   517.57     1.08   481.04   482.66     1.07
 MEAN     5.53     1.30     4.11   516.90     1.08   476.13   482.43     1.27
 HUB      5.69     1.33     3.80   521.38     1.09   466.55   484.98     1.80

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.85    28.59    24.20     4.39     0.93     0.32     1.80
 MEAN    35.26    17.04    12.70     4.34     0.92     0.28     2.22
 HUB     41.88    -5.68    -9.30     3.62     0.92     0.13     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.996       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   757.2552   410.2925   636.4711  1058.4908     0.7154    -0.0827     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.5751     3.9789   472.4975   483.3521     1.4430    32.8073    35.4000     2.5927

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   602.2075   147.3183   583.9102  1077.3047     0.5590     0.2864     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.5447     4.4961   489.4510   482.9207   554.9116     0.0298     0.4032

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   598.6039     0.0000   598.6039  1077.6659     0.5555     0.3185     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.4873   489.8024   482.8493     0.0000     0.0600     0.0462     0.2807
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8668     5.5196     1.2943   518.6165    40.6975   225.2056     1.7458

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 253043.281       0.557     797.772  607035.188   0.890178E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 5.647   EfDer =  0.999    SH =  0.891327E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     55.789    3744.068       5.520     518.616       1.000       1.000       0.980
 W Kg/sec =  25.359  Wdry =  55.784  WH2O = 0.005  lbm/sec   H2O =   0.037g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    148.568    3744.369       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 131138.234   43773.582       1.358     590.487     434.896     468.502       1.077

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   533.00    -0.18   533.00     0.49     0.79   671.47
 MEAN   18.08     0.00    -0.02   533.00    -0.18   533.00     0.49     0.73
 HUB    15.21     0.00    -0.02   533.00    -0.18   533.00     0.49     0.67

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    51.56     46.36     5.20   671.43   857.42     4.69   495.77   482.77     0.64
 MEAN   47.95     42.30     5.65   590.67   795.74     4.69   495.77   482.77     0.64
 HUB    43.01     37.84     5.17   496.96   728.86     4.69   495.77   482.77     0.64

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   602.93   292.73   527.10  1111.25     0.54     2.33     2.04     9.02
 MEAN   18.01   619.58   309.90   536.50  1107.27     0.56     2.40     2.13     7.35
 HUB    15.22   675.36   396.66   546.60  1103.61     0.61     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   667.19   646.57   374.46     0.58  5981.30     0.92     0.91
 MEAN  588.44   604.50   278.54     0.55  5584.69     0.92     0.91     0.91     1.42
 HUB   497.38   555.80   100.72     0.50  6041.18     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.71     1.22     5.51   550.04     1.06   520.81   496.96     0.30
 MEAN    6.63     1.20     5.37   547.96     1.06   517.09   496.09     0.33
 HUB     6.72     1.22     5.24   550.36     1.06   513.68   497.16     0.36

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    29.05    35.39    31.50     3.89     0.93     0.37     1.40
 MEAN   30.01    27.44    23.50     3.94     0.92     0.36     1.63
 HUB    35.97    10.44     6.50     3.94     0.92     0.38     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.999       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   695.0789   310.7745  621.7346  1100.2775     0.6317    -0.1933     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   6.6728     5.1162   510.6126  496.7747     0.3983    26.5582    30.6000     4.0418

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   586.2628  124.2919  572.9360  1112.2950     0.5271     0.1095     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     6.6484    5.5148   521.8214   496.5969   491.5697     0.0285     0.2759

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   614.7739     0.0000   614.7739  1109.3358     0.5542     0.1770     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3917	519.0717	496.5608	0.0000	0.0600	0.0457	0.0159

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8696	6.6259	1.2004	549.4547	30.8385	257.9878	1.9999

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
191815.234	0.431	604.738	546218.875	0.891912E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 5.898 EfDer = 0.999 SH = 0.891912E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
55.789	3744.068	6.626	549.455	1.000	1.000	0.980

W Kg/sec = 25.359 Wdry = 55.784 WH2O = 0.005 lbm/sec H2O = 0.042g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
127.389	3637.776	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
113345.523	43773.586	1.463	545.479	372.917	424.468	1.138

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	498.70	-0.17	498.70	0.45	0.74	637.11
MEAN	17.74	0.00	-0.02	498.70	-0.17	498.70	0.45	0.68	
HUB	15.05	0.00	-0.02	498.70	-0.17	498.70	0.45	0.63	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	52.75	46.36	6.39	655.75	823.97	5.79	529.46	496.48	0.23
MEAN	49.30	43.40	5.90	579.57	764.72	5.79	529.46	496.48	0.23
HUB	44.61	38.84	5.77	491.73	700.48	5.79	529.46	496.48	0.23

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	577.44	292.98	497.59	1145.16	0.50	2.26	1.98	8.75
MEAN	17.51	592.22	308.74	505.37	1141.54	0.52	2.34	2.07	6.78
HUB	14.85	644.78	389.58	513.78	1138.18	0.57	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	647.26	610.82	354.27	0.53	5807.45	0.92	0.91		
MEAN	571.99	569.83	263.25	0.50	5408.06	0.92	0.91	0.91	1.45
HUB	485.20	522.60	95.62	0.46	5787.86	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.93	1.20	6.68	579.96	1.06	553.16	508.68	0.12
MEAN	7.83	1.18	6.53	577.86	1.05	549.67	507.89	0.13
HUB	7.92	1.20	6.39	579.86	1.06	546.44	508.68	0.15

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	30.49	35.45	31.50	3.95	0.93	0.38	1.40
MEAN	31.42	27.52	23.50	4.02	0.92	0.38	1.62
HUB	37.17	10.54	6.50	4.04	0.92	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.999	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	657.8361	310.7680	579.8030	1136.0631	0.5790	-0.1747	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8812	6.2968	544.4477	508.4127	0.1528	28.1908	31.5000	3.3092

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	559.3740	122.0237	545.9024	1146.0735	0.4881	0.1163	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8607	6.6926	554.0786	508.3047	451.3937	0.0250	0.3016

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	571.2308	0.0000	571.2308	1144.9320	0.4989	0.2090	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.6280	553.0046	508.2571	0.0000	0.0600	0.0404	0.0688

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8768	7.8399	1.1832	579.2253	29.7711	246.1982	1.9085

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
185247.438	0.442	584.031	521492.688	0.892440E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 6.294 EfDer = 1.000 SH = 0.892440E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
55.789	3744.068	7.840	579.225	1.000	1.000	0.980

W Kg/sec = 25.359 Wdry = 55.784 WH2O = 0.005 lbm/sec H2O = 0.048g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
110.541	3543.057	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
99213.461	43773.582	1.586	513.330	323.615	395.845	1.223

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	463.86	-0.16	463.86	0.40	0.68	595.48
MEAN	16.97	0.00	-0.02	463.86	-0.16	463.86	0.40	0.63	
HUB	14.32	0.00	-0.02	463.86	-0.16	463.86	0.40	0.57	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	53.61	46.36	7.25	629.29	781.90	7.02	561.94	508.22	0.10
MEAN	50.09	43.80	6.29	554.49	723.05	7.02	561.94	508.22	0.10
HUB	45.26	37.84	7.42	467.88	658.96	7.02	561.94	508.22	0.10

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	545.92	285.49	465.31	1176.15	0.46	2.16	1.89	8.34
MEAN	16.57	557.21	295.69	472.28	1172.54	0.48	2.24	1.97	6.35
HUB	13.89	602.86	365.06	479.76	1169.14	0.52	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	616.87	571.25	331.38	0.49	5393.19	0.92	0.91		
MEAN	541.52	532.43	245.83	0.45	4903.37	0.92	0.91	0.91	1.47
HUB	453.83	487.90	88.77	0.42	5072.92	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.19	1.17	7.94	607.54	1.05	583.60	518.54	0.06
MEAN	9.06	1.16	7.78	604.97	1.04	580.02	517.64	0.07
HUB	9.10	1.16	7.61	605.86	1.05	576.66	517.97	0.07

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.53	35.46	31.50	3.96	0.93	0.40	1.40
MEAN	32.05	27.50	23.50	4.00	0.93	0.39	1.62
HUB	37.27	10.48	6.50	3.98	0.93	0.40	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	602.0938	297.3487	523.5463	1169.4303	0.5149	-0.1205	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1028	7.6144	577.0034	518.0279	0.0696	29.5945	32.4000	2.8055

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	518.4066	116.2635	505.2012	1177.0375	0.4404	0.1429	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.0871	7.9673	584.5358	517.9631	432.2457	0.0217	0.3241

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	514.1668	0.0000	514.1668	1177.3629	0.4367	0.2349	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.9640	584.8900	517.9051	0.0000	0.0600	0.0393	0.1404

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8786	9.0635	1.1561	606.1228	26.8983	248.4655	1.9261

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
167451.156	0.440	527.925	515234.469	0.893025E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.614 EfDer = 1.000 SH = 0.893025E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
55.789	3744.068	9.063	606.123	1.000	1.000	0.980

W Kg/sec = 25.359 Wdry = 55.784 WH2O = 0.005 lbm/sec H2O = 0.054g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
97.813	3463.551	1.381	0.249	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
88121.492	43773.582	1.780	509.668	286.372	384.739	1.343

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	414.96	-0.14	414.96	0.35	0.61	553.71
MEAN	15.91	0.00	-0.02	414.96	-0.14	414.96	0.35	0.56	
HUB	13.07	0.00	-0.02	414.96	-0.14	414.96	0.35	0.50	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.27	47.36	7.91	598.57	728.46	8.34	592.30	517.88	0.05
MEAN	51.41	44.80	6.61	519.93	665.33	8.34	592.30	517.88	0.05
HUB	45.83	38.84	6.99	427.04	595.55	8.34	592.30	517.88	0.05

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	507.74	285.61	419.79	1204.62	0.42	2.05	1.78	7.43
MEAN	15.50	512.29	283.51	426.69	1200.48	0.43	2.13	1.86	5.75
HUB	12.59	546.07	331.45	433.98	1196.49	0.46	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	586.16	516.29	300.55	0.43	5126.47	0.92	0.91		
MEAN	506.36	481.38	222.85	0.40	4395.93	0.92	0.91	0.91	1.52
HUB	411.36	441.27	79.90	0.37	4174.88	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.47	1.16	9.28	633.02	1.04	612.32	527.02	0.03
MEAN	10.26	1.13	9.07	629.19	1.04	608.12	525.76	0.04
HUB	10.20	1.13	8.86	628.03	1.04	604.08	525.38	0.04

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	34.23	35.60	31.50	4.10	0.93	0.43	1.40
MEAN	33.60	27.58	23.50	4.08	0.93	0.40	1.64
HUB	37.37	10.43	6.50	3.93	0.93	0.39	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	570.3671	288.7042	491.9029	1196.3171	0.4768	-0.1994	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.2856	8.8210	603.9633	526.0136	0.0393	30.4092	33.0000	2.5908

```
    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   497.4424   113.5914   484.2994  1202.4937     0.4137     0.0531     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.2610     9.1350   610.2148   525.9418   410.5396     0.0397     0.3383

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   481.8709     0.0000   481.8709  1203.6702     0.4003     0.2606     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.2026   611.4413   525.9412     0.0000     0.0600     0.0389     0.1076

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8809    10.2621     1.1322   630.0807    23.9587   255.2953     1.9790

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 149231.328       0.434     470.483  523279.656   0.893774E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.3184   Tt4 =   630.0807   T1  =   477.9194

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    946788.44   2984.9492    184.5910      2.4063      0.8608      4.7120      1.3184     37.3740
```

Appendix K: NPSS cycle analysis for the descent conditions

5μm, 2 g/m^3, ISA +18R

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**********************************************************************************************************************************
Date:05/10/13    Time:11:02:24    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 26/ 1/10    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 463.46    Stator 1 exit: 470.96    Stator 2 inlet: 480.37    Stator 2 exit: 485.22
            Stator 3 inlet: 494.89    Stator 3 exit: 499.30    Stator 4 inlet: 508.32    Stator 4 exit: 512.06
            Stator 5 inlet: 519.46    Stator 5 exit: 522.70            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.76
Fan Bypass Relative Humidity       1.23
LPC Inlet Relative Humidity        1.13
LPC Exit Relative Humidity         0.10
HPC Relative Humidity              0.04
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          772.64    Fan/LPC Inlet Flow Velocity        186.05
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   454.86
Additional Water at LPC Exit   0.0051221
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	257.43	631.1	1.1046	697.06	8.6926	772.64	9.498	0.736	10.000	1711.4	1618.8	1126.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	257.43	4.267	457.74	-20.96	0.0000	832.95	2.854	407.97	2541.1	0.7800	1.40084	0.0000295	257.42	0.008	0.0000
FS1	Inlet.Fl_O	257.43	4.267	457.74	-20.96	0.0000	832.95	3.892	445.87	4168.2	0.3645	1.40084	0.0000295	257.42	0.008	0.0000
FS12	Splitter.Fl_02	230.87	4.265	457.74	-20.96	0.0000	747.39	3.839	444.17	3531.8	0.3904	1.40084	0.0000295	230.86	0.007	0.0000
FS2	Splitter.Fl_01	26.56	4.265	457.74	-20.96	0.0000	85.98	4.171	454.86	830.5	0.1779	1.40084	0.0000295	26.56	0.001	0.0000
FS14	Fan.Fl_O	230.87	4.820	475.75	-16.64	0.0000	674.18	4.044	452.46	2606.7	0.5068	1.40070	0.0000295	230.86	0.007	0.0000
FS23	LPC.Fl_O	26.56	6.666	532.40	-3.05	0.0000	59.33	6.378	525.73	412.6	0.2518	1.40004	0.0000295	26.56	0.001	0.0000
FS24	VaporIN.Fl_O	26.70	6.666	539.36	-30.78	0.0000	60.02	6.370	532.42	412.6	0.2555	1.39923	0.0051516	26.56	0.137	0.0051
FS25	Bleed2.Fl_O	24.03	6.666	539.36	-30.78	0.0000	54.02	6.428	533.81	412.6	0.2282	1.39923	0.0051516	23.90	0.123	0.0051
FS3	HPC.Fl_O	22.86	40.527	976.91	76.09	0.0000	11.38	35.644	942.82	49.7	0.4347	1.38133	0.0051516	22.74	0.117	0.0051
FS36	Bleed3.Fl_O	17.72	40.527	976.91	76.09	0.0000	8.82	37.725	957.76	49.3	0.3235	1.38133	0.0051516	17.63	0.091	0.0051
FS4	Burner.Fl_O	17.91	39.594	1711.35	63.90	0.0110	12.08	37.383	1687.04	74.6	0.2947	1.33108	0.0051516	17.63	0.091	0.0184
FS45	HPT.Fl_O	23.94	9.499	1130.07	-39.67	0.0082	54.67	8.601	1100.35	265.4	0.3835	1.36604	0.0051516	23.62	0.122	0.0151
FS49	LPT.Fl_O	24.22	3.261	885.66	-99.71	0.0081	142.62	3.070	871.00	860.2	0.2969	1.38136	0.0051516	23.90	0.123	0.0150
FS5	TEGV.Fl_O	24.22	3.261	885.73	-99.71	0.0081	142.63	3.070	871.07	860.2	0.2969	1.38136	0.0051516	23.90	0.123	0.0150
FS8	Core_Nozz.Fl_O	24.22	3.261	885.80	-99.71	0.0081	142.64	2.854	853.73	613.5	0.4432	1.38135	0.0051516	23.90	0.123	0.0150
FS17	FanDuctLkg.Fl_O	230.87	4.820	475.75	-16.64	0.0000	674.18	4.044	452.46	2606.7	0.5068	1.40070	0.0000295	230.86	0.007	0.0000
FS171	Bleed15.Fl_O	233.54	4.820	476.48	-16.80	0.0000	682.50	3.910	448.81	2481.9	0.5546	1.40069	0.0000877	233.52	0.020	0.0001
FS172	FanDuct.Fl_O	233.54	4.820	476.48	-16.80	0.0000	682.50	3.910	448.81	2481.9	0.5546	1.40069	0.0000877	233.52	0.020	0.0001
FS173	Byp_Nozz.Fl_O	233.54	4.820	476.48	-16.80	0.0000	682.50	2.854	410.12	2006.9	0.8984	1.40069	0.0000877	233.52	0.020	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	747.39	1.130	0.9056	2571.761	1.0393	0.9073	-1409.8	1585.81	54.78
LPC	85.98	1.563	0.8352	2571.761	1.1631	0.8452	-672.7	6.98	3.75
HPC	54.02	6.080	0.8183	8958.397	1.8112	0.8570	-3544.8	61.41	58.06
HPT	12.08	4.168	0.8749	220.829	1.3651	0.8525	3544.8		
LPT	54.67	2.913	0.8525	71.869	1.2742	0.8326	2082.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	868.39	1.127	0.9075	2547.239	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	74.06	1.524	0.7801	0.679	0.0000	1.1609	1.0752	1.0706	0.0003
HPC	49.13	5.841	0.8268	8719.572	10.9737	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.081	0.8749	1.327	4.0806	12.6299	0.9723	1.0000	0.0003
LPT	0.84	2.439	0.8589	0.808	2.4386	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2541.05	6182.0
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2969	860.21
FanDuct	0.0000	0.5546	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.6926	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9135.3	2038.0	3544.8
LP_Shaft	2416.0	4527.0	2082.4

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	0.8842	759.97	22.65	9.499
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.2811	759.97	22.65	3.261
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	738.04	17.31	14.115
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	873.36	50.44	27.660
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	738.04	17.31	14.115
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	976.91	76.09	40.527
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	738.04	17.31	14.115

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1000	1.0000	1.0000	2.6696	539.36	-30.78	6.666
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	2.7433	976.91	76.09	39.594
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.4004	976.91	76.09	22.379
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	976.91	76.09	40.527
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	976.91	76.09	40.527
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	976.91	76.09	40.527
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	475.75	-16.64	4.820
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	475.75	-16.64	4.820
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	475.75	-16.64	4.820
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	475.75	-16.64	4.820

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1711.30	0.9995	0.0230	0.19363	0.01099

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.143	0.9801	1.0000	0.9800	613.40	0.443	619.3	466.2
Byp_Nozz	1.689	0.9800	1.0000	0.9800	2006.86	0.898	874.4	6346.9

```
**********************************************************************************************************************************
Date:05/10/13    Time:11:03:04    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 17/ 59/ 3/13    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 456.93    Stator 1 exit: 463.94    Stator 2 inlet: 472.74    Stator 2 exit: 477.26
            Stator 3 inlet: 486.30    Stator 3 exit: 490.39    Stator 4 inlet: 498.82    Stator 4 exit: 502.29
            Stator 5 inlet: 509.20    Stator 5 exit: 512.21            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.24
Fan Bypass Relative Humidity       1.60
LPC Inlet Relative Humidity        1.44
LPC Exit Relative Humidity         0.13
HPC Relative Humidity              0.04
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          723.11    Fan/LPC Inlet Flow Velocity        179.78
Ambient Static Pressure          2.95    Fan/LPC Inlet Static Pressure        4.11
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   448.87
Additional Water at LPC Exit   0.0042001
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.730	38334.0	18.00	250.47	617.3	1.0753	663.74	8.7698	723.11	9.219	0.763	10.000	1682.4	1590.5	1108.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	250.47	4.201	451.57	-22.43	0.0000	817.49	2.947	407.97	2558.5	0.7300	1.40089	0.0000285	250.47	0.007	0.0000
FS1	Inlet.Fl_O	250.47	4.201	451.57	-22.43	0.0000	817.49	3.848	440.34	4168.2	0.3565	1.40089	0.0000285	250.47	0.007	0.0000
FS12	Splitter.Fl_02	224.84	4.199	451.57	-22.43	0.0000	734.18	3.797	438.72	3531.8	0.3821	1.40089	0.0000285	224.83	0.006	0.0000
FS2	Splitter.Fl_01	25.64	4.199	451.57	-22.43	0.0000	83.72	4.112	448.87	830.5	0.1730	1.40089	0.0000285	25.64	0.001	0.0000
FS14	Fan.Fl_O	224.84	4.713	468.33	-18.41	0.0000	666.15	3.977	446.12	2606.7	0.4983	1.40077	0.0000285	224.83	0.006	0.0000
FS23	LPC.Fl_O	25.64	6.423	521.36	-5.70	0.0000	58.81	6.151	514.95	412.6	0.2494	1.40020	0.0000285	25.64	0.001	0.0000
FS24	VaporIN.Fl_O	25.75	6.423	527.16	-28.44	0.0000	59.38	6.145	520.53	412.6	0.2525	1.39954	0.0042286	25.64	0.108	0.0042
FS25	Bleed2.Fl_O	23.17	6.423	527.16	-28.44	0.0000	53.45	6.200	521.86	412.6	0.2255	1.39954	0.0042286	23.07	0.098	0.0042
FS3	HPC.Fl_O	22.05	38.732	953.52	75.46	0.0000	11.34	34.103	920.44	49.7	0.4326	1.38287	0.0042286	21.95	0.093	0.0042
FS36	Bleed3.Fl_O	17.09	38.732	953.52	75.46	0.0000	8.79	36.074	934.91	49.3	0.3221	1.38287	0.0042286	17.01	0.072	0.0042
FS4	Burner.Fl_O	17.27	37.840	1682.41	63.43	0.0108	12.08	35.728	1658.42	74.6	0.2946	1.33269	0.0042286	17.01	0.072	0.0173
FS45	HPT.Fl_O	23.08	9.192	1112.08	-37.23	0.0081	54.04	8.346	1083.56	265.4	0.3779	1.36742	0.0042286	22.80	0.096	0.0140
FS49	LPT.Fl_O	23.35	3.311	881.94	-93.56	0.0080	135.17	3.138	868.95	860.2	0.2796	1.38177	0.0042286	23.07	0.098	0.0139
FS5	TEGV.Fl_O	23.35	3.311	882.01	-93.56	0.0080	135.17	3.138	869.02	860.2	0.2796	1.38177	0.0042286	23.07	0.098	0.0139
FS8	Core_Nozz.Fl_O	23.35	3.311	882.08	-93.56	0.0080	135.18	2.947	854.07	613.4	0.4139	1.38176	0.0042286	23.07	0.098	0.0139
FS17	FanDuctLkg.Fl_O	224.84	4.713	468.33	-18.41	0.0000	666.15	3.977	446.12	2606.7	0.4983	1.40077	0.0000285	224.83	0.006	0.0000
FS171	Bleed15.Fl_O	227.41	4.713	469.00	-18.53	0.0000	674.26	3.852	442.69	2481.9	0.5445	1.40076	0.0000759	227.39	0.017	0.0001
FS172	FanDuct.Fl_O	227.41	4.713	469.00	-18.53	0.0000	674.26	3.852	442.69	2481.9	0.5445	1.40076	0.0000759	227.39	0.017	0.0001
FS173	Byp_Nozz.Fl_O	227.41	4.713	469.00	-18.53	0.0000	674.26	2.947	410.01	2006.9	0.8471	1.40076	0.0000759	227.39	0.017	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	734.18	1.122	0.9048	2506.966	1.0371	0.9064	-1277.8	2157.02	54.66
LPC	83.72	1.530	0.8363	2506.966	1.1546	0.8458	-606.9	6.78	3.35
HPC	53.45	6.030	0.8176	8940.025	1.8088	0.8563	-3323.8	61.25	57.86
HPT	12.08	4.117	0.8735	219.735	1.3620	0.8510	3323.8		
LPT	54.04	2.776	0.8468	70.145	1.2590	0.8271	1884.6		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	853.04	1.120	0.9066	2483.062	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	71.25	1.495	0.7770	0.662	0.0000	1.1749	1.0707	1.0762	0.0003
HPC	48.61	5.793	0.8261	8701.690	10.9899	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.030	0.8735	1.321	4.0303	12.6299	0.9723	1.0000	0.0003
LPT	0.83	2.336	0.8531	0.789	2.3358	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2558.49	5629.4

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2796	860.21
FanDuct	0.0000	0.5445	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7698	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9012.9	1936.9	3323.8
LP_Shaft	2339.2	4231.5	1884.6

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	0.8527	741.99	23.51	9.192
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.2711	741.99	23.51	3.311
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	720.63	18.31	13.531
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	852.52	50.52	26.455
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	720.63	18.31	13.531
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	953.52	75.46	38.732
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	720.63	18.31	13.531

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1000	1.0000	1.0000	2.5745	527.16	-28.44	6.423
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	2.6456	953.52	75.46	37.840
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.3150	953.52	75.46	21.454
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	953.52	75.46	38.732
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	953.52	75.46	38.732
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	953.52	75.46	38.732
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	468.33	-18.41	4.713
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	468.33	-18.41	4.713
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	468.33	-18.41	4.713
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	468.33	-18.41	4.713

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1682.35	0.9995	0.0230	0.18437	0.01084

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.124	0.9801	1.0000	0.9800	613.40	0.414	578.4	419.9
Byp_Nozz	1.599	0.9800	1.0000	0.9800	2006.86	0.847	824.4	5826.8

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*****************************************************************************************************************************************
Date:05/10/13    Time:11:03:21    Model:                                   Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 26/ 1/10    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 454.91    Stator 1 exit: 461.74    Stator 2 inlet: 470.30    Stator 2 exit: 474.69
            Stator 3 inlet: 483.50    Stator 3 exit: 487.47    Stator 4 inlet: 495.68    Stator 4 exit: 499.04
            Stator 5 inlet: 505.77    Stator 5 exit: 508.68             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity        10.00
Fan Face Relative Humidity        2.40
Fan Bypass Relative Humidity      1.74
LPC Inlet Relative Humidity       1.56
LPC Exit Relative Humidity        0.15
HPC Relative Humidity             0.04
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity           707.26    Fan/LPC Inlet Flow Velocity        177.40
Ambient Static Pressure           3.09    Fan/LPC Inlet Static Pressure        4.25
Ambient Static Temperature      407.97    Fan/LPC Inlet Static Temperature   447.05
Additional Water at LPC Exit     0.0037136
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.714	37357.0	18.00	257.21	630.5	1.0705	675.00	8.7997	707.26	9.100	0.772	10.000	1670.8	1579.3	1100.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	257.21	4.339	449.68	-22.87	0.0000	811.10	3.088	407.97	2563.0	0.7140	1.40090	0.0000272	257.21	0.007	0.0000
FS1	Inlet.Fl_O	257.21	4.339	449.68	-22.87	0.0000	811.10	3.980	438.70	4168.2	0.3533	1.40090	0.0000272	257.21	0.007	0.0000
FS12	Splitter.Fl_02	230.97	4.337	449.68	-22.87	0.0000	728.70	3.928	437.11	3531.8	0.3787	1.40090	0.0000272	230.96	0.006	0.0000
FS2	Splitter.Fl_01	26.25	4.337	449.68	-22.87	0.0000	82.81	4.249	447.05	830.5	0.1711	1.40090	0.0000272	26.25	0.001	0.0000
FS14	Fan.Fl_O	230.97	4.855	465.97	-18.97	0.0000	662.71	4.106	444.18	2606.7	0.4947	1.40079	0.0000272	230.96	0.006	0.0000
FS23	LPC.Fl_O	26.25	6.577	517.63	-6.59	0.0000	58.59	6.300	511.31	412.6	0.2484	1.40024	0.0000272	26.25	0.001	0.0000
FS24	VaporIN.Fl_O	26.34	6.577	522.79	-26.70	0.0000	59.10	6.294	516.28	412.6	0.2511	1.39967	0.0037408	26.25	0.098	0.0037
FS25	Bleed2.Fl_O	23.71	6.577	522.79	-26.70	0.0000	53.19	6.350	517.58	412.6	0.2243	1.39967	0.0037408	23.62	0.088	0.0037
FS3	HPC.Fl_O	22.56	39.490	944.85	76.06	0.0000	11.33	34.782	912.13	49.7	0.4319	1.38345	0.0037408	22.48	0.084	0.0037
FS36	Bleed3.Fl_O	17.48	39.490	944.85	76.06	0.0000	8.78	36.786	926.44	49.3	0.3217	1.38345	0.0037408	17.42	0.065	0.0037
FS4	Burner.Fl_O	17.67	38.580	1670.79	64.10	0.0108	12.08	36.427	1646.92	74.6	0.2945	1.33337	0.0037408	17.42	0.065	0.0168
FS45	HPT.Fl_O	23.62	9.412	1104.81	-35.44	0.0080	53.83	8.554	1076.71	265.4	0.3760	1.36800	0.0037408	23.35	0.087	0.0135
FS49	LPT.Fl_O	23.90	3.451	880.02	-90.37	0.0079	132.54	3.279	867.60	860.2	0.2736	1.38198	0.0037408	23.62	0.088	0.0134
FS5	TEGV.Fl_O	23.90	3.451	880.09	-90.37	0.0079	132.55	3.279	867.67	860.2	0.2736	1.38198	0.0037408	23.62	0.088	0.0134
FS8	Core_Nozz.Fl_O	23.90	3.451	880.16	-90.37	0.0079	132.55	3.088	853.50	613.4	0.4039	1.38197	0.0037408	23.62	0.088	0.0134
FS17	FanDuctLkg.Fl_O	230.97	4.855	465.97	-18.97	0.0000	662.71	4.106	444.18	2606.7	0.4947	1.40079	0.0000272	230.96	0.006	0.0000
FS171	Bleed15.Fl_O	233.60	4.855	466.62	-19.06	0.0000	670.74	3.980	440.83	2481.9	0.5402	1.40078	0.0000689	233.59	0.016	0.0001
FS172	FanDuct.Fl_O	233.60	4.855	466.62	-19.06	0.0000	670.74	3.980	440.83	2481.9	0.5402	1.40078	0.0000689	233.59	0.016	0.0001
FS173	Byp_Nozz.Fl_O	233.60	4.855	466.62	-19.06	0.0000	670.74	3.088	409.96	2006.9	0.8302	1.40078	0.0000689	233.59	0.016	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	728.70	1.119	0.9044	2480.486	1.0362	0.9059	-1276.0	2532.49	54.59
LPC	82.81	1.516	0.8368	2480.486	1.1511	0.8461	-604.9	6.70	3.28
HPC	53.19	6.005	0.8172	8931.793	1.8073	0.8560	-3363.9	61.28	57.86
HPT	12.08	4.099	0.8729	219.379	1.3610	0.8503	3363.9		
LPT	53.83	2.727	0.8445	69.486	1.2534	0.8250	1880.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	846.67	1.117	0.9063	2456.835	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	70.11	1.483	0.7758	0.655	0.0000	1.1812	1.0695	1.0787	0.0003
HPC	48.38	5.769	0.8256	8693.677	10.9915	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.013	0.8728	1.318	4.0134	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.299	0.8508	0.782	2.2988	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2562.99	5654.2

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2736	860.21
FanDuct	0.0000	0.5402	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7997	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8967.2	1970.2	3363.9
LP_Shaft	2309.6	4277.1	1880.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8725	735.41	24.68	9.412
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2774	735.41	24.68	3.451
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	714.26	19.54	13.818
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	844.84	51.40	26.983
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	714.26	19.54	13.818
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	944.85	76.06	39.490
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	714.26	19.54	13.818

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6345	522.79	-26.70	6.577
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.7072	944.85	76.06	38.580
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3689	944.85	76.06	21.896
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	944.85	76.06	39.490
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	944.85	76.06	39.490
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	944.85	76.06	39.490
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	465.97	-18.97	4.855
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	465.97	-18.97	4.855
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	465.97	-18.97	4.855
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	465.97	-18.97	4.855

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1670.72	0.9995	0.0230	0.18750	0.01076

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.118	0.9801	1.0000	0.9800	613.40	0.404	564.2	419.0
Byp_Nozz	1.572	0.9800	1.0000	0.9800	2006.86	0.830	807.9	5865.7

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**********************************************************************************************************************************
Date:05/10/13    Time:11:03:37    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 26/ 1/10    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 456.54    Stator 1 exit: 462.95    Stator 2 inlet: 470.98    Stator 2 exit: 475.09
            Stator 3 inlet: 483.34    Stator 3 exit: 487.03    Stator 4 inlet: 494.73    Stator 4 exit: 497.84
            Stator 5 inlet: 504.13    Stator 5 exit: 506.82            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.00
Fan Bypass Relative Humidity       2.25
LPC Inlet Relative Humidity        2.00
LPC Exit Relative Humidity         0.22
HPC Relative Humidity              0.04
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          667.90    Fan/LPC Inlet Flow Velocity        171.93
Ambient Static Pressure          3.58    Fan/LPC Inlet Static Pressure        4.74
Ambient Static Temperature     414.42    Fan/LPC Inlet Static Temperature   449.15
Additional Water at LPC Exit   0.0033426
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.669	34281.0	18.00	278.75	685.0	1.0571	724.12	8.8754	667.90	8.765	0.795	10.000	1662.7	1571.2	1097.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	278.75	4.831	451.61	-22.45	0.0000	791.22	3.578	414.42	2579.0	0.6690	1.40088	0.0000348	278.74	0.010	0.0000
FS1	Inlet.Fl_O	278.75	4.831	451.61	-22.45	0.0000	791.22	4.453	441.19	4168.2	0.3432	1.40088	0.0000348	278.74	0.010	0.0000
FS12	Splitter.Fl_02	250.52	4.829	451.61	-22.45	0.0000	711.46	4.397	439.67	3531.8	0.3680	1.40088	0.0000348	250.51	0.009	0.0000
FS2	Splitter.Fl_01	28.23	4.829	451.61	-22.45	0.0000	80.16	4.737	449.15	830.5	0.1654	1.40088	0.0000348	28.23	0.001	0.0000
FS14	Fan.Fl_O	250.52	5.366	466.93	-18.78	0.0000	650.98	4.575	446.09	2606.7	0.4827	1.40078	0.0000348	250.51	0.009	0.0000
FS23	LPC.Fl_O	28.23	7.140	515.39	-7.17	0.0000	57.91	6.847	509.25	412.6	0.2453	1.40027	0.0000348	28.23	0.001	0.0000
FS24	VaporIN.Fl_O	28.32	7.140	520.06	-25.28	0.0000	58.37	6.842	513.75	412.6	0.2477	1.39975	0.0033774	28.23	0.095	0.0034
FS25	Bleed2.Fl_O	25.49	7.140	520.06	-25.28	0.0000	52.53	6.901	515.01	412.6	0.2213	1.39975	0.0033774	25.40	0.086	0.0034
FS3	HPC.Fl_O	24.25	42.344	937.10	76.19	0.0000	11.31	37.316	904.75	49.7	0.4309	1.38397	0.0033774	24.17	0.082	0.0034
FS36	Bleed3.Fl_O	18.80	42.344	937.10	76.19	0.0000	8.77	39.456	918.89	49.3	0.3210	1.38397	0.0033774	18.73	0.063	0.0034
FS4	Burner.Fl_O	19.00	41.369	1662.68	64.25	0.0107	12.08	39.060	1638.90	74.6	0.2944	1.33383	0.0033774	18.73	0.063	0.0164
FS45	HPT.Fl_O	25.39	10.201	1101.30	-34.01	0.0080	53.30	9.291	1073.91	265.4	0.3715	1.36830	0.0033774	25.11	0.085	0.0131
FS49	LPT.Fl_O	25.69	3.943	888.52	-85.91	0.0079	125.31	3.768	877.42	860.2	0.2574	1.38156	0.0033774	25.40	0.086	0.0130
FS5	TEGV.Fl_O	25.69	3.943	888.59	-85.91	0.0079	125.32	3.768	877.49	860.2	0.2574	1.38156	0.0033774	25.40	0.086	0.0130
FS8	Core_Nozz.Fl_O	25.69	3.943	888.66	-85.91	0.0079	125.32	3.578	865.10	613.3	0.3774	1.38155	0.0033774	25.40	0.086	0.0130
FS17	FanDuctLkg.Fl_O	250.52	5.366	466.93	-18.78	0.0000	650.98	4.575	446.09	2606.7	0.4827	1.40078	0.0000348	250.51	0.009	0.0000
FS171	Bleed15.Fl_O	253.35	5.366	467.53	-18.86	0.0000	658.76	4.444	442.96	2481.9	0.5260	1.40077	0.0000720	253.33	0.018	0.0001
FS172	FanDuct.Fl_O	253.35	5.366	467.53	-18.86	0.0000	658.76	4.444	442.96	2481.9	0.5260	1.40077	0.0000720	253.33	0.018	0.0001
FS173	Byp_Nozz.Fl_O	253.35	5.366	467.53	-18.86	0.0000	658.76	3.578	416.33	2006.9	0.7832	1.40077	0.0000720	253.33	0.018	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	711.46	1.111	0.9036	2402.972	1.0339	0.9050	-1301.2	5205.99	54.13
LPC	80.16	1.479	0.8382	2402.972	1.1412	0.8469	-610.6	6.43	3.07
HPC	52.53	5.931	0.8159	8910.155	1.8019	0.8548	-3570.6	61.54	58.05
HPT	12.08	4.056	0.8723	218.806	1.3580	0.8499	3570.6		
LPT	53.30	2.587	0.8398	67.567	1.2372	0.8209	1911.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	826.64	1.109	0.9054	2380.060	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	66.75	1.448	0.7722	0.635	0.0000	1.2009	1.0681	1.0856	0.0003
HPC	47.78	5.698	0.8244	8672.616	10.9836	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.971	0.8723	1.315	3.9709	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.194	0.8460	0.760	2.1936	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2578.96	5786.5
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2574	860.21
FanDuct	0.0000	0.5260	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8754	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8922.0	2101.9	3570.6
LP_Shaft	2242.3	4477.7	1911.7

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9380	730.10	25.46	10.201
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2982	730.10	25.46	3.943
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	709.20	20.38	14.885
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	838.24	51.84	28.967
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	709.20	20.38	14.885
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	937.10	76.19	42.344
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	709.20	20.38	14.885

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.8321	520.06	-25.28	7.140
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.9103	937.10	76.19	41.369
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.5466	937.10	76.19	23.541
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	937.10	76.19	42.344
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	937.10	76.19	42.344
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	937.10	76.19	42.344
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	466.93	-18.78	5.366
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	466.93	-18.78	5.366
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	466.93	-18.78	5.366
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	466.93	-18.78	5.366

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1662.62	0.9995	0.0230	0.20114	0.01074

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.102	0.9801	1.0000	0.9800	613.40	0.377	530.6	423.6
Byp_Nozz	1.500	0.9800	1.0000	0.9800	2006.86	0.783	768.0	6047.9

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**********************************************************************************************************************************
Date:05/10/13    Time:11:04:04    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 17/ 45/ 2/14    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 465.17    Stator 1 exit: 470.74    Stator 2 inlet: 477.63    Stator 2 exit: 480.97
            Stator 3 inlet: 488.14    Stator 3 exit: 491.08    Stator 4 inlet: 497.81    Stator 4 exit: 500.24
            Stator 5 inlet: 505.66    Stator 5 exit: 507.72            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.96
Fan Bypass Relative Humidity       3.10
LPC Inlet Relative Humidity        2.83
LPC Exit Relative Humidity         0.46
HPC Relative Humidity              0.05
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          617.99    Fan/LPC Inlet Flow Velocity        173.93
Ambient Static Pressure          4.36    Fan/LPC Inlet Static Pressure        5.49
Ambient Static Temperature     429.58    Fan/LPC Inlet Static Temperature   458.90
Additional Water at LPC Exit   0.0034488
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.608	30029.0	18.00	305.33	746.5	1.0593	790.75	8.4334	617.99	8.209	0.828	10.000	1667.2	1575.1	1102.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	305.33	5.595	461.42	-20.30	0.0000	756.40	4.358	429.58	2598.1	0.6080	1.40081	0.0000681	305.31	0.021	0.0001
FS1	Inlet.Fl_O	305.33	5.595	461.42	-20.30	0.0000	756.40	5.198	451.80	4168.2	0.3259	1.40081	0.0000681	305.31	0.021	0.0001
FS12	Splitter.Fl_02	272.96	5.592	461.42	-20.30	0.0000	676.55	5.146	450.55	3531.8	0.3469	1.40081	0.0000681	272.94	0.019	0.0001
FS2	Splitter.Fl_01	32.37	5.592	461.42	-20.30	0.0000	80.22	5.486	458.90	830.5	0.1656	1.40081	0.0000681	32.36	0.002	0.0001
FS14	Fan.Fl_O	272.96	6.146	475.40	-16.95	0.0000	624.92	5.325	456.30	2606.7	0.4570	1.40070	0.0000681	272.94	0.019	0.0001
FS23	LPC.Fl_O	32.37	7.851	516.54	-7.08	0.0000	60.46	7.498	509.80	412.6	0.2570	1.40025	0.0000681	32.36	0.002	0.0001
FS24	VaporIN.Fl_O	32.48	7.851	521.34	-25.77	0.0000	60.95	7.491	514.41	412.6	0.2596	1.39972	0.0035169	32.36	0.114	0.0035
FS25	Bleed2.Fl_O	27.61	7.851	521.34	-25.77	0.0000	51.81	7.595	516.43	412.6	0.2181	1.39972	0.0035169	27.51	0.097	0.0035
FS3	HPC.Fl_O	26.27	45.928	936.05	75.15	0.0000	11.29	40.499	903.89	49.7	0.4298	1.38401	0.0035169	26.18	0.092	0.0035
FS36	Bleed3.Fl_O	20.36	45.928	936.05	75.15	0.0000	8.75	42.808	917.94	49.3	0.3203	1.38401	0.0035169	20.29	0.071	0.0035
FS4	Burner.Fl_O	20.58	44.870	1667.23	63.12	0.0108	12.08	42.365	1643.41	74.6	0.2945	1.33353	0.0035169	20.29	0.071	0.0166
FS45	HPT.Fl_O	27.50	11.217	1107.02	-34.56	0.0081	52.64	10.244	1080.30	265.4	0.3662	1.36786	0.0035169	27.19	0.096	0.0133
FS49	LPT.Fl_O	27.83	4.719	911.84	-82.11	0.0080	114.91	4.544	902.40	860.2	0.2346	1.38014	0.0035169	27.51	0.097	0.0132
FS5	TEGV.Fl_O	27.83	4.719	911.92	-82.11	0.0080	114.91	4.544	902.47	860.2	0.2346	1.38014	0.0035169	27.51	0.097	0.0132
FS8	Core_Nozz.Fl_O	27.83	4.719	911.99	-82.11	0.0080	114.92	4.358	892.23	613.4	0.3410	1.38014	0.0035169	27.51	0.097	0.0132
FS17	FanDuctLkg.Fl_O	272.96	6.146	475.40	-16.95	0.0000	624.92	5.325	456.30	2606.7	0.4570	1.40070	0.0000681	272.94	0.019	0.0001
FS171	Bleed15.Fl_O	277.83	6.146	476.21	-17.10	0.0000	636.61	5.177	453.41	2481.9	0.5010	1.40069	0.0001284	277.80	0.036	0.0001
FS172	FanDuct.Fl_O	277.83	6.146	476.21	-17.10	0.0000	636.61	5.177	453.41	2481.9	0.5010	1.40069	0.0001284	277.80	0.036	0.0001
FS173	Byp_Nozz.Fl_O	277.83	6.146	476.21	-17.10	0.0000	636.61	4.358	431.61	2006.9	0.7180	1.40069	0.0001284	277.80	0.036	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	676.55	1.099	0.9026	2257.238	1.0303	0.9039	-1294.1	-----.--	52.66
LPC	80.22	1.404	0.8528	2257.238	1.1195	0.8597	-605.1	5.94	2.65
HPC	51.81	5.850	0.8145	8886.483	1.7955	0.8534	-3846.1	61.83	58.24
HPT	12.08	4.000	0.8725	218.196	1.3538	0.8503	3846.1		
LPT	52.64	2.377	0.8317	63.988	1.2115	0.8139	1899.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	786.09	1.097	0.9044	2235.715	0.0417	0.8607	1.0235	0.9980	0.9905
LPC	60.58	1.385	0.7657	0.596	0.0000	1.3242	1.0502	1.1138	0.0003
HPC	47.12	5.622	0.8229	8649.575	10.9757	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.917	0.8725	1.311	3.9172	12.6299	0.9723	1.0000	0.0003
LPT	0.81	2.036	0.8379	0.720	2.0357	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2598.14	5864.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2346	860.21
FanDuct	0.0000	0.5010	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.4334	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8909.3	2267.3	3846.1
LP_Shaft	2129.0	4685.2	1899.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0159	730.21	24.69	11.217
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3230	730.21	24.69	4.719
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	709.43	19.64	16.228
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	837.74	50.93	31.459
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	709.43	19.64	16.228
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	936.05	75.15	45.928
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	709.43	19.64	16.228

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1500	1.0000	1.0000	4.8717	521.34	-25.77	7.851
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.1521	936.05	75.15	44.870
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.7582	936.05	75.15	25.620
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	936.05	75.15	45.928
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	936.05	75.15	45.928
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	936.05	75.15	45.928
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	475.40	-16.95	6.146
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.40	-16.95	6.146
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	475.40	-16.95	6.146
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.40	-16.95	6.146

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1667.17	0.9995	0.0230	0.21965	0.01083

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.083	0.9801	1.0000	0.9800	613.40	0.341	486.5	420.8
Byp_Nozz	1.410	0.9800	1.0000	0.9800	2006.86	0.718	716.9	6190.3

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**********************************************************************************************************************************
Date:05/10/13    Time:11:04:33    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 20/ 48/ 2/17    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 473.22    Stator 1 exit: 477.33    Stator 2 inlet: 482.00    Stator 2 exit: 483.85
            Stator 3 inlet: 489.04    Stator 3 exit: 490.47    Stator 4 inlet: 495.44    Stator 4 exit: 496.48
            Stator 5 inlet: 500.12    Stator 5 exit: 500.87            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.82
Fan Bypass Relative Humidity       3.93
LPC Inlet Relative Humidity        3.82
LPC Exit Relative Humidity         1.17
HPC Relative Humidity              0.05
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity           571.13    Fan/LPC Inlet Flow Velocity        193.70
Ambient Static Pressure           5.30    Fan/LPC Inlet Static Pressure        6.36
Ambient Static Temperature      445.14    Fan/LPC Inlet Static Temperature   469.20
Additional Water at LPC Exit    0.0031166

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.552   25666.0    18.00    330.79      766.2    1.1014     843.96    7.0896    571.13     7.351     0.859         10.000    1676.5   1582.1   1112.9


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht      FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O          330.79     6.516    472.33    -18.03   0.0000    711.91     5.297    445.14    2597.0  0.5520   1.40072   0.0001274    330.75    0.042    0.0001
FS1   Inlet.Fl_O            330.79     6.516    472.33    -18.03   0.0000    711.91     6.111    463.72    4168.2  0.3043   1.40072   0.0001274    330.75    0.042    0.0001
FS12  Splitter.Fl_02        289.90     6.513    472.33    -18.03   0.0000    624.22     6.077    463.04    3531.8  0.3163   1.40072   0.0001274    289.86    0.037    0.0001
FS2   Splitter.Fl_01         40.89     6.513    472.33    -18.03   0.0000     88.05     6.364    469.20     830.5  0.1824   1.40072   0.0001274     40.89    0.005    0.0001
FS14  Fan.Fl_O              289.90     7.063    484.59    -15.09   0.0000    583.04     6.262    468.19    2606.7  0.4181   1.40061   0.0001274    289.86    0.037    0.0001
FS23  LPC.Fl_O               40.89     8.237    512.12     -8.48   0.0000     72.49     7.692    502.20     412.6  0.3142   1.40030   0.0001274     40.89    0.005    0.0001
FS24  VaporIN.Fl_O           41.02     8.237    516.49    -25.37   0.0000     73.03     7.682    506.31     412.6  0.3172   1.39982   0.0032440     40.89    0.133    0.0032
FS25  Bleed2.Fl_O            28.71     8.237    516.49    -25.37   0.0000     51.12     7.976    511.76     412.6  0.2150   1.39982   0.0032440     28.62    0.093    0.0032
FS3   HPC.Fl_O               27.32    47.900    926.25     74.26   0.0000     11.20    42.344    895.01      49.7  0.4253   1.38462   0.0032440     27.23    0.088    0.0032
FS36  Bleed3.Fl_O            21.17    47.900    926.25     74.26   0.0000      8.68    44.703    908.63      49.3  0.3173   1.38462   0.0032440     21.10    0.068    0.0032
FS4   Burner.Fl_O            21.41    46.797   1676.50     61.93   0.0111     12.09    44.183   1652.57      74.6  0.2946   1.33294   0.0032440     21.10    0.068    0.0167
FS45  HPT.Fl_O               28.61    12.051   1117.30    -34.37   0.0083     51.21    11.068   1092.03     265.4  0.3545   1.36708   0.0032440     28.28    0.092    0.0133
FS49  LPT.Fl_O               28.95     5.628    943.48    -76.59   0.0082    101.94     5.465    935.92     860.2  0.2068   1.37816   0.0032440     28.62    0.093    0.0132
FS5   TEGV.Fl_O              28.95     5.628    943.55    -76.59   0.0082    101.95     5.465    935.99     860.2  0.2068   1.37816   0.0032440     28.62    0.093    0.0132
FS8   Core_Nozz.Fl_O         28.95     5.628    943.62    -76.59   0.0082    101.95     5.297    928.03     613.4  0.2979   1.37815   0.0032440     28.62    0.093    0.0132
FS17  FanDuctLkg.Fl_O       289.90     7.063    484.59    -15.09   0.0000    583.04     6.262    468.19    2606.7  0.4181   1.40061   0.0001274    289.86    0.037    0.0001
FS171 Bleed15.Fl_O           302.20     7.063    485.89    -15.51   0.0000    608.61     6.067    465.21    2481.9  0.4710   1.40058   0.0002539    302.13    0.077    0.0003
FS172 FanDuct.Fl_O           302.20     7.063    485.89    -15.51   0.0000    608.61     6.067    465.21    2481.9  0.4710   1.40058   0.0002539    302.13    0.077    0.0003
FS173 Byp_Nozz.Fl_O          302.20     7.063    485.89    -15.51   0.0000    608.61     5.297    447.50    2006.9  0.6543   1.40058   0.0002539    302.13    0.077    0.0003

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff        Nc       TR   efPoly        pwr       SMN      SMW
Fan       624.22   1.084    0.9036  2051.291   1.0260   0.9047    -1205.4  -2829.56    49.84
LPC        88.05   1.265    0.8244  2051.291   1.0843   0.8301     -552.0      6.37     2.41
HPC        51.12   5.815    0.8137  8864.996   1.7933   0.8527    -3949.3     60.93    57.30
HPT        12.09   3.883    0.8738   216.055   1.3452   0.8524     3949.3
LPT        51.21   2.141    0.8223    58.562   1.1813   0.8061     1757.5

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan        725.28   1.082   0.9055   2031.732    0.0426      0.8607    1.0235    0.9980    0.9905
LPC         53.69   1.313   0.7609      0.542    0.0000      1.6397    0.8445    1.0834    0.0003
HPC         46.49   5.588   0.8222   8628.661   11.0393      1.0995    1.0494    0.9898    0.9733
HPT          0.96   3.803   0.8738      1.298    3.8034     12.6299    0.9723    1.0000    0.0003
LPT          0.78   1.858   0.8284      0.659    1.8583     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2596.96	5871.9

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2068	860.21
FanDuct	0.0000	0.4710	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.0896	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8846.4	2344.7	3949.3
LP_Shaft	1957.5	4715.4	1757.5

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0566	722.81	24.45	12.051
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3359	722.81	24.45	5.628
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	702.28	19.46	16.963
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	829.07	50.35	32.828
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	702.28	19.46	16.963
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	926.25	74.26	47.900
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	702.28	19.46	16.963

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.3000	1.0000	1.0000	12.3054	516.49	-25.37	8.237
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.2784	926.25	74.26	46.797
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.8687	926.25	74.26	26.922
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	926.25	74.26	47.900
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	926.25	74.26	47.900
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	926.25	74.26	47.900
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	484.59	-15.09	7.063
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	484.59	-15.09	7.063
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	484.59	-15.09	7.063
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	484.59	-15.09	7.063

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1676.44	0.9995	0.0230	0.23443	0.01111

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.063	0.9801	1.0000	0.9800	613.40	0.298	433.1	389.6
Byp_Nozz	1.333	0.9800	1.0000	0.9800	2006.86	0.654	665.2	6248.5

```
**********************************************************************************************************************************
Date:05/10/13    Time:11:05:11    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 35/ 63/ 2/32    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 486.38    Stator 1 exit: 489.37    Stator 2 inlet: 492.19    Stator 2 exit: 492.99
            Stator 3 inlet: 496.39    Stator 3 exit: 496.76    Stator 4 inlet: 500.06    Stator 4 exit: 500.13
            Stator 5 inlet: 502.04    Stator 5 exit: 501.92            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.86
Fan Bypass Relative Humidity       4.90
LPC Inlet Relative Humidity        5.02
LPC Exit Relative Humidity         2.57
HPC Relative Humidity              0.07
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          518.26    Fan/LPC Inlet Flow Velocity        203.53
Ambient Static Pressure          6.74    Fan/LPC Inlet Static Pressure        7.74
Ambient Static Temperature     465.18    Fan/LPC Inlet Static Temperature   484.11
Additional Water at LPC Exit   0.0034795

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS      OPR       EPR       PowerSet      T4      T41      T49
 0.490   20047.0    18.00    368.47      853.8    1.1023     941.09    6.2711    518.26    6.475     0.890       10.000      1710.7   1612.2   1144.3


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht      FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair    WH2O  H2O frac
FS0   Ambient.Fl_O          368.47     7.943    487.56    -15.16   0.0000    660.94     6.740    465.18    2618.3  0.4900   1.40057   0.0002627    368.37   0.097    0.0003
FS1   Inlet.Fl_O            368.47     7.943    487.56    -15.16   0.0000    660.94     7.522    480.01    4168.2  0.2802   1.40057   0.0002627    368.37   0.097    0.0003
FS12  Splitter.Fl_02        317.79     7.939    487.56    -15.16   0.0000    570.33     7.501    479.70    3531.8  0.2859   1.40057   0.0002627    317.71   0.083    0.0003
FS2   Splitter.Fl_01         50.68     7.939    487.56    -15.16   0.0000     90.94     7.745    484.11     830.5  0.1886   1.40057   0.0002627     50.66   0.013    0.0003
FS14  Fan.Fl_O              317.79     8.519    498.52    -12.53   0.0000    537.45     7.717    484.62    2606.7  0.3784   1.40045   0.0002627    317.71   0.083    0.0003
FS23  LPC.Fl_O               50.68     9.114    515.69     -8.41   0.0000     81.48     8.335    502.69     412.6  0.3595   1.40024   0.0002627     50.66   0.013    0.0003
FS24  VaporIN.Fl_O           50.85     9.114    520.54    -27.25   0.0000     82.15     8.319    507.15     412.6  0.3635   1.39970   0.0037423     50.66   0.190    0.0037
FS25  Bleed2.Fl_O            30.51     9.114    520.54    -27.25   0.0000     49.29     8.846    516.13     412.6  0.2069   1.39970   0.0037423     30.40   0.114    0.0037
FS3   HPC.Fl_O               29.03    51.433    926.42     71.49   0.0000     11.09    45.607    895.95      49.7  0.4200   1.38453   0.0037423     28.92   0.108    0.0037
FS36  Bleed3.Fl_O            22.50    51.433    926.42     71.49   0.0000      8.59    48.075    909.19      49.3  0.3137   1.38453   0.0037423     22.42   0.084    0.0037
FS4   Burner.Fl_O            22.76    50.248   1710.66     58.59   0.0117     12.09    47.438   1686.33      74.6  0.2950   1.33086   0.0037423     22.42   0.084    0.0178
FS45  HPT.Fl_O               30.42    13.583   1149.03    -36.64   0.0087     48.98    12.579   1125.65     265.4  0.3371   1.36468   0.0037423     30.04   0.112    0.0143
FS49  LPT.Fl_O               30.77     7.050    994.22    -74.21   0.0086     88.81     6.896    988.27     860.2  0.1793   1.37471   0.0037423     30.40   0.114    0.0142
FS5   TEGV.Fl_O              30.77     7.050    994.29    -74.21   0.0086     88.82     6.896    988.34     860.2  0.1793   1.37470   0.0037423     30.40   0.114    0.0142
FS8   Core_Nozz.Fl_O         30.77     7.050    994.36    -74.21   0.0086     88.82     6.740    982.25     613.4  0.2564   1.37470   0.0037423     30.40   0.114    0.0142
FS17  FanDuctLkg.Fl_O       317.79     8.519    498.52    -12.53   0.0000    537.45     7.717    484.62    2606.7  0.3784   1.40045   0.0002627    317.71   0.083    0.0003
FS171 Bleed15.Fl_O           338.13     8.519    499.85    -13.42   0.0000    572.61     7.480    481.60    2481.9  0.4350   1.40040   0.0004714    337.97   0.159    0.0005
FS172 FanDuct.Fl_O           338.13     8.519    499.85    -13.42   0.0000    572.61     7.480    481.60    2481.9  0.4350   1.40040   0.0004714    337.97   0.159    0.0005
FS173 Byp_Nozz.Fl_O          338.13     8.519    499.85    -13.42   0.0000    572.61     6.740    467.46    2006.9  0.5881   1.40040   0.0004714    337.97   0.159    0.0005

TURBOMACHINERY PERFORMANCE DATA
                Wc      PR       eff        Nc        TR   efPoly        pwr       SMN      SMW
Fan         570.33   1.073    0.9058  1856.126    1.0225   0.9067   -1181.7  -1892.99    46.38
LPC          90.94   1.148    0.6971  1856.126    1.0577   0.7030    -483.8      6.94     2.22
HPC          49.29   5.643    0.8099  8805.853    1.7797   0.8490   -4159.2     60.74    56.91
HPT          12.09   3.699    0.8761   213.291    1.3305   0.8559    4159.2
LPT          48.98   1.927    0.8155    53.090    1.1524   0.8012    1665.6

TURBOMACHINERY MAP DATA
             WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan         662.66   1.071   0.9076  1838.428    0.0439      0.8607    1.0235    0.9980    0.9905
LPC          47.26   1.249   0.7560     0.490    0.0000      1.9242    0.5939    0.9220    0.0003
HPC          44.83   5.425   0.8182  8571.094   11.0764      1.0995    1.0494    0.9898    0.9733
HPT           0.96   3.625   0.8761     1.282    3.6246     12.6299    0.9723    1.0000    0.0003
LPT           0.75   1.697   0.8216     0.597    1.6970     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2618.26	5935.2
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1793	860.21
FanDuct	0.0000	0.4350	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.2711	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8821.7	2476.2	4159.2
LP_Shaft	1799.6	4860.9	1665.6

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.1228	724.91	22.12	13.583
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3570	724.91	22.12	7.050
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	704.57	17.18	18.424
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	830.16	47.79	35.351
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	704.57	17.18	18.424
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	926.42	71.49	51.433
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	704.57	17.18	18.424

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	20.3407	520.54	-27.25	9.114
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.4837	926.42	71.49	50.248
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	3.0484	926.42	71.49	29.276
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	926.42	71.49	51.433
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	926.42	71.49	51.433
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	926.42	71.49	51.433
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	498.52	-12.53	8.519
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	498.52	-12.53	8.519
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	498.52	-12.53	8.519
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	498.52	-12.53	8.519

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1710.60	0.9995	0.0230	0.26141	0.01166

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.046	0.9801	1.0000	0.9800	613.40	0.256	383.1	366.4
Byp_Nozz	1.264	0.9800	1.0000	0.9800	2006.86	0.588	611.1	6422.6

```
**********************************************************************************************************************************
Date:05/10/13    Time:11:05:49    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 42/ 70/ 2/39    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 500.38    Stator 1 exit: 502.78    Stator 2 inlet: 505.16    Stator 2 exit: 505.91
            Stator 3 inlet: 508.66    Stator 3 exit: 509.07    Stator 4 inlet: 511.70    Stator 4 exit: 511.88
            Stator 5 inlet: 513.53    Stator 5 exit: 513.57            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         6.54
Fan Bypass Relative Humidity       5.94
LPC Inlet Relative Humidity        5.71
LPC Exit Relative Humidity         3.35
HPC Relative Humidity              0.12
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity           479.99    Fan/LPC Inlet Flow Velocity        172.62
Ambient Static Pressure           8.15    Fan/LPC Inlet Static Pressure        9.18
Ambient Static Temperature      481.63    Fan/LPC Inlet Static Temperature   498.33
Additional Water at LPC Exit    0.0046347
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.446	15435.0	18.00	387.25	669.1	1.3373	894.73	6.8286	479.99	5.312	0.902	10.000	1665.1	1568.8	1136.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	387.25	9.342	500.81	-13.05	0.0000	598.60	8.149	481.63	2544.6	0.4460	1.40040	0.0004484	387.07	0.174	0.0004
FS1	Inlet.Fl_O	387.25	9.342	500.81	-13.05	0.0000	598.60	8.940	494.55	4168.2	0.2515	1.40040	0.0004484	387.07	0.174	0.0004
FS12	Splitter.Fl_02	337.78	9.337	500.81	-13.05	0.0000	522.40	8.909	494.14	3531.8	0.2597	1.40040	0.0004484	337.63	0.151	0.0004
FS2	Splitter.Fl_01	49.47	9.337	500.81	-13.05	0.0000	76.50	9.177	498.33	830.5	0.1577	1.40040	0.0004484	49.44	0.022	0.0004
FS14	Fan.Fl_O	337.78	9.823	508.93	-11.10	0.0000	500.60	9.033	496.89	2606.7	0.3480	1.40030	0.0004484	337.63	0.151	0.0004
FS23	LPC.Fl_O	49.47	10.469	523.60	-7.58	0.0000	69.77	9.831	514.28	412.6	0.3009	1.40011	0.0004484	49.44	0.022	0.0004
FS24	VaporIN.Fl_O	49.69	10.469	529.97	-32.65	0.0000	70.52	9.815	520.29	412.6	0.3051	1.39938	0.0050830	49.44	0.251	0.0051
FS25	Bleed2.Fl_O	29.82	10.469	529.97	-32.65	0.0000	42.31	10.244	526.69	412.6	0.1765	1.39938	0.0050830	29.67	0.151	0.0051
FS3	HPC.Fl_O	28.37	49.622	898.40	57.00	0.0000	11.06	44.030	868.94	49.7	0.4186	1.38593	0.0050830	28.23	0.143	0.0051
FS36	Bleed3.Fl_O	21.99	49.622	898.40	57.00	0.0000	8.57	46.398	881.74	49.3	0.3127	1.38593	0.0050830	21.88	0.111	0.0051
FS4	Burner.Fl_O	22.24	48.479	1665.12	44.60	0.0114	12.08	45.772	1641.35	74.6	0.2945	1.33304	0.0050830	21.88	0.111	0.0188
FS45	HPT.Fl_O	29.72	14.309	1141.07	-41.71	0.0085	45.27	13.417	1121.56	265.4	0.3083	1.36515	0.0050830	29.32	0.149	0.0153
FS49	LPT.Fl_O	30.07	8.399	1015.41	-71.97	0.0084	73.61	8.274	1011.29	860.2	0.1478	1.37332	0.0050830	29.67	0.151	0.0152
FS5	TEGV.Fl_O	30.07	8.399	1015.48	-71.97	0.0084	73.61	8.274	1011.36	860.2	0.1478	1.37331	0.0050830	29.67	0.151	0.0152
FS8	Core_Nozz.Fl_O	30.07	8.399	1015.55	-71.97	0.0084	73.61	8.149	1007.26	613.4	0.2100	1.37331	0.0050830	29.67	0.151	0.0152
FS17	FanDuctLkg.Fl_O	337.78	9.823	508.93	-11.10	0.0000	500.60	9.033	496.89	2606.7	0.3480	1.40030	0.0004484	337.63	0.151	0.0004
FS171	Bleed15.Fl_O	357.66	9.823	510.11	-12.30	0.0000	530.67	8.818	494.61	2481.9	0.3956	1.40025	0.0007048	357.41	0.252	0.0007
FS172	FanDuct.Fl_O	357.66	9.823	510.11	-12.30	0.0000	530.67	8.818	494.61	2481.9	0.3956	1.40025	0.0007048	357.41	0.252	0.0007
FS173	Byp_Nozz.Fl_O	357.66	9.823	510.11	-12.30	0.0000	530.67	8.149	483.58	2006.9	0.5234	1.40025	0.0007048	357.41	0.252	0.0007

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	522.40	1.052	0.8996	1618.857	1.0162	0.9004	-931.1	-1526.51	44.70
LPC	76.50	1.121	0.7304	1618.857	1.0455	0.7348	-382.6	8.21	1.95
HPC	42.31	4.740	0.7956	8544.066	1.6952	0.8340	-3690.6	68.43	63.22
HPT	12.08	3.388	0.8678	211.651	1.3031	0.8480	3690.5		
LPT	45.27	1.704	0.8023	47.092	1.1202	0.7901	1313.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	606.98	1.051	0.9015	1603.421	0.0442	0.8607	1.0235	0.9980	0.9905
LPC	39.96	1.187	0.7483	0.428	0.0000	1.9142	0.6495	0.9761	0.0003
HPC	38.48	4.564	0.8038	8316.287	10.7481	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.322	0.8678	1.272	3.3218	12.6299	0.9723	1.0000	0.0003
LPT	0.69	1.529	0.8083	0.530	1.5293	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2544.56	5777.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1478	860.21
FanDuct	0.0000	0.3956	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.8286	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8636.6	2244.3	3690.5
LP_Shaft	1590.7	4337.7	1313.8

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0973	715.33	12.17	14.309
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3489	715.33	12.17	8.399
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	696.87	7.69	19.083
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	810.90	35.48	34.744
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	696.87	7.69	19.083
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	898.40	57.00	49.622
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	696.87	7.69	19.083

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.4000	1.0000	1.0000	19.8780	529.97	-32.65	10.469
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.4045	898.40	57.00	48.479
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.9790	898.40	57.00	28.934
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	898.40	57.00	49.622
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	898.40	57.00	49.622
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	898.40	57.00	49.622
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	508.93	-11.10	9.823
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	508.93	-11.10	9.823
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	508.93	-11.10	9.823
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	508.93	-11.10	9.823

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1665.06	0.9995	0.0230	0.24854	0.01136

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.031	0.9801	1.0000	0.9800	613.40	0.210	317.7	296.9
Byp_Nozz	1.205	0.9800	1.0000	0.9800	2006.86	0.523	553.2	6149.3

5μm, 4 g/m^3, ISA +18R

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**********************************************************************************************************************************
Date:07/05/13    Time:11:13:13    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 40/ 2/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 463.54    Stator 1 exit: 471.07    Stator 2 inlet: 480.53    Stator 2 exit: 485.41
            Stator 3 inlet: 495.10    Stator 3 exit: 499.53    Stator 4 inlet: 508.56    Stator 4 exit: 512.31
            Stator 5 inlet: 519.67    Stator 5 exit: 522.89            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.76
Fan Bypass Relative Humidity       1.22
LPC Inlet Relative Humidity        1.13
LPC Exit Relative Humidity         0.09
HPC Relative Humidity              0.06
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity           772.64    Fan/LPC Inlet Flow Velocity        185.27
Ambient Static Pressure           2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature      407.97    Fan/LPC Inlet Static Temperature   454.88
Additional Water at LPC Exit    0.0072598
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	257.50	640.6	1.0925	699.88	8.7350	772.64	9.501	0.736	10.000	1718.6	1625.8	1131.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	257.50	4.267	457.74	-20.96	0.0000	833.18	2.854	407.97	2541.8	0.7800	1.40084	0.0000295	257.50	0.008	0.0000
FS1	Inlet.Fl_O	257.50	4.267	457.74	-20.96	0.0000	833.18	3.892	445.86	4168.2	0.3646	1.40084	0.0000295	257.50	0.008	0.0000
FS12	Splitter.Fl_02	231.05	4.265	457.74	-20.96	0.0000	747.97	3.838	444.14	3531.8	0.3908	1.40084	0.0000295	231.05	0.007	0.0000
FS2	Splitter.Fl_01	26.45	4.265	457.74	-20.96	0.0000	85.63	4.172	454.88	830.5	0.1771	1.40084	0.0000295	26.45	0.001	0.0000
FS14	Fan.Fl_O	231.05	4.824	475.86	-16.61	0.0000	674.27	4.047	452.56	2606.7	0.5069	1.40070	0.0000295	231.05	0.007	0.0000
FS23	LPC.Fl_O	26.45	6.676	532.79	-2.96	0.0000	59.02	6.391	526.19	412.6	0.2504	1.40003	0.0000295	26.45	0.001	0.0000
FS24	VaporIN.Fl_O	26.64	6.676	542.60	-42.18	0.0000	59.99	6.379	535.62	412.6	0.2556	1.39889	0.0072892	26.45	0.193	0.0072
FS25	Bleed2.Fl_O	23.98	6.676	542.60	-42.18	0.0000	53.99	6.438	537.02	412.6	0.2282	1.39889	0.0072892	23.81	0.174	0.0072
FS3	HPC.Fl_O	22.82	40.539	981.98	65.37	0.0000	11.38	35.643	947.67	49.7	0.4353	1.38069	0.0072892	22.65	0.165	0.0072
FS36	Bleed3.Fl_O	17.68	40.539	981.98	65.37	0.0000	8.82	37.730	962.71	49.3	0.3240	1.38069	0.0072892	17.55	0.128	0.0072
FS4	Burner.Fl_O	17.88	39.605	1718.62	53.22	0.0111	12.07	37.392	1694.21	74.6	0.2950	1.33036	0.0072892	17.55	0.128	0.0206
FS45	HPT.Fl_O	23.89	9.502	1135.41	-51.03	0.0083	54.67	8.602	1105.53	265.4	0.3840	1.36535	0.0072892	23.53	0.171	0.0172
FS49	LPT.Fl_O	24.17	3.262	889.88	-111.50	0.0082	142.65	3.071	875.14	860.2	0.2972	1.38078	0.0072892	23.81	0.174	0.0171
FS5	TEGV.Fl_O	24.17	3.262	889.95	-111.50	0.0082	142.65	3.071	875.21	860.2	0.2972	1.38078	0.0072892	23.81	0.174	0.0171
FS8	Core_Nozz.Fl_O	24.17	3.262	890.02	-111.50	0.0082	142.66	2.854	857.76	613.4	0.4438	1.38077	0.0072892	23.81	0.174	0.0171
FS17	FanDuctLkg.Fl_O	231.05	4.824	475.86	-16.61	0.0000	674.27	4.047	452.56	2606.7	0.5069	1.40070	0.0000295	231.05	0.007	0.0000
FS171	Bleed15.Fl_O	233.72	4.824	476.63	-16.90	0.0000	682.59	3.913	448.94	2481.9	0.5547	1.40069	0.0001116	233.69	0.026	0.0001
FS172	FanDuct.Fl_O	233.72	4.824	476.63	-16.90	0.0000	682.59	3.913	448.94	2481.9	0.5547	1.40069	0.0001116	233.69	0.026	0.0001
FS173	Byp_Nozz.Fl_O	233.72	4.824	476.63	-16.90	0.0000	682.59	2.854	410.16	2006.9	0.8991	1.40069	0.0001116	233.69	0.026	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	747.97	1.131	0.9058	2576.390	1.0396	0.9075	-1419.8	1555.29	54.72
LPC	85.63	1.565	0.8338	2576.390	1.1640	0.8440	-673.4	7.00	3.79
HPC	53.99	6.073	0.8182	8957.455	1.8098	0.8568	-3560.4	61.54	58.19
HPT	12.07	4.168	0.8753	220.999	1.3647	0.8530	3560.4		
LPT	54.67	2.913	0.8533	71.829	1.2741	0.8335	2093.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	869.07	1.128	0.9077	2551.824	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	74.26	1.526	0.7803	0.680	0.0000	1.1531	1.0755	1.0686	0.0003
HPC	49.11	5.834	0.8266	8718.656	10.9660	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.080	0.8753	1.328	4.0804	12.6299	0.9723	1.0000	0.0003
LPT	0.84	2.439	0.8596	0.808	2.4387	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2541.77	6183.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2972	860.21
FanDuct	0.0000	0.5547	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7350	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9161.8	2041.1	3560.4
LP_Shaft	2420.3	4542.2	2093.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8824	764.17	11.60	9.502
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2806	764.17	11.60	3.262
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	742.15	6.22	14.126
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	878.02	39.56	27.671
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	742.15	6.22	14.126
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	981.98	65.37	40.539
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	742.15	6.22	14.126

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6643	542.60	-42.18	6.676
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.7379	981.98	65.37	39.605
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3957	981.98	65.37	22.386
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	981.98	65.37	40.539
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	981.98	65.37	40.539
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	981.98	65.37	40.539
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	475.86	-16.61	4.824
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.86	-16.61	4.824
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	475.86	-16.61	4.824
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.86	-16.61	4.824

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1718.56	0.9995	0.0230	0.19441	0.01107

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.143	0.9801	1.0000	0.9800	613.40	0.444	621.9	467.3
Byp_Nozz	1.690	0.9800	1.0000	0.9800	2006.86	0.899	875.1	6357.1

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**********************************************************************************************************************************
Date:07/05/13    Time:11:13:38    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 39/ 2/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 457.01    Stator 1 exit: 464.06    Stator 2 inlet: 472.90    Stator 2 exit: 477.45
            Stator 3 inlet: 486.52    Stator 3 exit: 490.64    Stator 4 inlet: 499.08    Stator 4 exit: 502.57
            Stator 5 inlet: 509.49    Stator 5 exit: 512.50            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.24
Fan Bypass Relative Humidity       1.59
LPC Inlet Relative Humidity        1.44
LPC Exit Relative Humidity         0.13
HPC Relative Humidity              0.06
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          723.11    Fan/LPC Inlet Flow Velocity        179.03
Ambient Static Pressure          2.95    Fan/LPC Inlet Static Pressure        4.11
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   448.89
Additional Water at LPC Exit   0.0063349
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.730	38334.0	18.00	250.56	626.4	1.0643	666.61	8.8127	723.11	9.223	0.763	10.000	1690.0	1597.9	1113.5

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	250.56	4.201	451.57	-22.43	0.0000	817.76	2.947	407.97	2559.3	0.7300	1.40089	0.0000285	250.55	0.007	0.0000
FS1	Inlet.Fl_O	250.56	4.201	451.57	-22.43	0.0000	817.76	3.847	440.34	4168.2	0.3567	1.40089	0.0000285	250.55	0.007	0.0000
FS12	Splitter.Fl_02	225.02	4.199	451.57	-22.43	0.0000	734.79	3.796	438.70	3531.8	0.3825	1.40089	0.0000285	225.02	0.006	0.0000
FS2	Splitter.Fl_01	25.53	4.199	451.57	-22.43	0.0000	83.38	4.113	448.89	830.5	0.1723	1.40089	0.0000285	25.53	0.001	0.0000
FS14	Fan.Fl_O	225.02	4.717	468.44	-18.39	0.0000	666.28	3.980	446.21	2606.7	0.4985	1.40077	0.0000285	225.02	0.006	0.0000
FS23	LPC.Fl_O	25.53	6.434	521.81	-5.59	0.0000	58.50	6.164	515.47	412.6	0.2480	1.40019	0.0000285	25.53	0.001	0.0000
FS24	VaporIN.Fl_O	25.70	6.434	530.51	-39.83	0.0000	59.36	6.155	523.84	412.6	0.2526	1.39920	0.0063634	25.53	0.162	0.0063
FS25	Bleed2.Fl_O	23.13	6.434	530.51	-39.83	0.0000	53.42	6.210	525.18	412.6	0.2256	1.39920	0.0063634	22.98	0.146	0.0063
FS3	HPC.Fl_O	22.00	38.751	958.82	64.78	0.0000	11.35	34.108	925.51	49.7	0.4333	1.38222	0.0063634	21.87	0.139	0.0063
FS36	Bleed3.Fl_O	17.05	38.751	958.82	64.78	0.0000	8.79	36.085	940.09	49.3	0.3226	1.38222	0.0063634	16.95	0.108	0.0063
FS4	Burner.Fl_O	17.24	37.858	1690.05	52.79	0.0109	12.08	35.742	1665.94	74.6	0.2949	1.33194	0.0063634	16.95	0.108	0.0195
FS45	HPT.Fl_O	23.04	9.196	1117.65	-48.58	0.0082	54.05	8.349	1088.97	265.4	0.3784	1.36670	0.0063634	22.71	0.145	0.0162
FS49	LPT.Fl_O	23.31	3.312	886.36	-105.33	0.0081	135.21	3.139	873.29	860.2	0.2800	1.38118	0.0063634	22.98	0.146	0.0161
FS5	TEGV.Fl_O	23.31	3.312	886.43	-105.33	0.0081	135.22	3.139	873.36	860.2	0.2800	1.38117	0.0063634	22.98	0.146	0.0161
FS8	Core_Nozz.Fl_O	23.31	3.312	886.50	-105.33	0.0081	135.22	2.947	858.32	613.4	0.4145	1.38117	0.0063634	22.98	0.146	0.0161
FS17	FanDuctLkg.Fl_O	225.02	4.717	468.44	-18.39	0.0000	666.28	3.980	446.21	2606.7	0.4985	1.40077	0.0000285	225.02	0.006	0.0000
FS171	Bleed15.Fl_O	227.59	4.717	469.14	-18.63	0.0000	674.39	3.855	442.81	2481.9	0.5446	1.40075	0.0000996	227.57	0.023	0.0001
FS172	FanDuct.Fl_O	227.59	4.717	469.14	-18.63	0.0000	674.39	3.855	442.81	2481.9	0.5446	1.40075	0.0000996	227.57	0.023	0.0001
FS173	Byp_Nozz.Fl_O	227.59	4.717	469.14	-18.63	0.0000	674.39	2.947	410.05	2006.9	0.8478	1.40075	0.0000996	227.57	0.023	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	734.79	1.123	0.9050	2511.599	1.0374	0.9066	-1287.0	2101.01	54.60
LPC	83.38	1.532	0.8342	2511.599	1.1556	0.8439	-608.3	6.80	3.37
HPC	53.42	6.023	0.8175	8939.174	1.8073	0.8562	-3339.8	61.38	57.98
HPT	12.08	4.117	0.8739	219.913	1.3616	0.8516	3339.8		
LPT	54.05	2.777	0.8476	70.099	1.2590	0.8280	1895.3		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	853.75	1.120	0.9069	2487.652	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	71.46	1.497	0.7772	0.663	0.0000	1.1669	1.0712	1.0733	0.0003
HPC	48.59	5.786	0.8259	8700.862	10.9822	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.030	0.8739	1.322	4.0304	12.6299	0.9723	1.0000	0.0003
LPT	0.83	2.336	0.8539	0.789	2.3362	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2559.33	5631.2

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2800	860.21
FanDuct	0.0000	0.5446	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8127	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9040.7	1940.3	3339.8
LP_Shaft	2343.5	4247.6	1895.3

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	0.8510	746.36	12.48	9.196
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.2706	746.36	12.48	3.312
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	724.90	7.25	13.543
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	857.39	39.68	26.470
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	724.90	7.25	13.543
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	958.82	64.78	38.751
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	724.90	7.25	13.543

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1000	1.0000	1.0000	2.5695	530.51	-39.83	6.434
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	2.6405	958.82	64.78	37.858
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.3105	958.82	64.78	21.463
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	958.82	64.78	38.751
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	958.82	64.78	38.751
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	958.82	64.78	38.751
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	468.44	-18.39	4.717
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	468.44	-18.39	4.717
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	468.44	-18.39	4.717
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	468.44	-18.39	4.717

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1689.98	0.9995	0.0230	0.18517	0.01093

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.124	0.9801	1.0000	0.9800	613.40	0.415	580.9	420.9
Byp_Nozz	1.601	0.9800	1.0000	0.9800	2006.86	0.848	825.1	5836.7

****

Date:07/05/13 Time:11:14:03 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0

Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 11/ 39/ 2/ 8 Run by: Philip C Jorgenson PC: 10

Temperature Stator 1 inlet: 454.98 Stator 1 exit: 461.84 Stator 2 inlet: 470.44 Stator 2 exit: 474.87

Stator 3 inlet: 483.70 Stator 3 exit: 487.70 Stator 4 inlet: 495.92 Stator 4 exit: 499.31

Stator 5 inlet: 506.04 Stator 5 exit: 508.97 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	2.40		
Fan Bypass Relative Humidity	1.73		
LPC Inlet Relative Humidity	1.56		
LPC Exit Relative Humidity	0.14		
HPC Relative Humidity	0.06		
Drop Diameter	0.0000050	Inlet Length	40.00
Ambient Flow Velocity	707.26	Fan/LPC Inlet Flow Velocity	176.74
Ambient Static Pressure	3.09	Fan/LPC Inlet Static Pressure	4.25
Ambient Static Temperature	407.97	Fan/LPC Inlet Static Temperature	447.07
Additional Water at LPC Exit	0.0056534		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.714	37357.0	18.00	257.30	639.1	1.0605	677.76	8.8384	707.26	9.105	0.772	10.000	1677.8	1586.0	1105.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	257.30	4.339	449.68	-22.87	0.0000	811.37	3.088	407.97	2563.9	0.7140	1.40090	0.0000272	257.29	0.007	0.0000
FS1	Inlet.Fl_O	257.30	4.339	449.68	-22.87	0.0000	811.37	3.980	438.69	4168.2	0.3534	1.40090	0.0000272	257.29	0.007	0.0000
FS12	Splitter.Fl_02	231.15	4.337	449.68	-22.87	0.0000	729.27	3.928	437.09	3531.8	0.3790	1.40090	0.0000272	231.14	0.006	0.0000
FS2	Splitter.Fl_01	26.15	4.337	449.68	-22.87	0.0000	82.51	4.250	447.07	830.5	0.1705	1.40090	0.0000272	26.15	0.001	0.0000
FS14	Fan.Fl_O	231.15	4.858	466.07	-18.95	0.0000	662.85	4.109	444.26	2606.7	0.4949	1.40079	0.0000272	231.14	0.006	0.0000
FS23	LPC.Fl_O	26.15	6.587	518.04	-6.49	0.0000	58.32	6.312	511.78	412.6	0.2472	1.40024	0.0000272	26.15	0.001	0.0000
FS24	VaporIN.Fl_O	26.30	6.587	525.86	-37.06	0.0000	59.09	6.304	519.31	412.6	0.2512	1.39936	0.0056806	26.15	0.149	0.0056
FS25	Bleed2.Fl_O	23.67	6.587	525.86	-37.06	0.0000	53.18	6.360	520.62	412.6	0.2244	1.39936	0.0056806	23.54	0.134	0.0056
FS3	HPC.Fl_O	22.52	39.511	949.74	66.36	0.0000	11.34	34.790	916.80	49.7	0.4325	1.38287	0.0056806	22.40	0.127	0.0056
FS36	Bleed3.Fl_O	17.45	39.511	949.74	66.36	0.0000	8.79	36.800	931.21	49.3	0.3221	1.38287	0.0056806	17.36	0.099	0.0056
FS4	Burner.Fl_O	17.64	38.601	1677.81	54.42	0.0108	12.08	36.444	1653.86	74.6	0.2947	1.33269	0.0056806	17.36	0.099	0.0187
FS45	HPT.Fl_O	23.58	9.416	1109.91	-45.77	0.0081	53.84	8.556	1081.67	265.4	0.3764	1.36735	0.0056806	23.26	0.132	0.0155
FS49	LPT.Fl_O	23.86	3.452	884.08	-101.08	0.0080	132.60	3.279	871.58	860.2	0.2740	1.38144	0.0056806	23.54	0.134	0.0153
FS5	TEGV.Fl_O	23.86	3.452	884.15	-101.08	0.0080	132.60	3.279	871.65	860.2	0.2740	1.38144	0.0056806	23.54	0.134	0.0154
FS8	Core_Nozz.Fl_O	23.86	3.452	884.22	-101.08	0.0080	132.61	3.088	857.40	613.4	0.4045	1.38143	0.0056806	23.54	0.134	0.0154
FS17	FanDuctLkg.Fl_O	231.15	4.858	466.07	-18.95	0.0000	662.85	4.109	444.26	2606.7	0.4949	1.40079	0.0000272	231.14	0.006	0.0000
FS171	Bleed15.Fl_O	233.78	4.858	466.75	-19.15	0.0000	670.88	3.982	440.94	2481.9	0.5404	1.40077	0.0000905	233.76	0.021	0.0001
FS172	FanDuct.Fl_O	233.78	4.858	466.75	-19.15	0.0000	670.88	3.982	440.94	2481.9	0.5404	1.40077	0.0000905	233.76	0.021	0.0001
FS173	Byp_Nozz.Fl_O	233.78	4.858	466.75	-19.15	0.0000	670.88	3.088	410.00	2006.9	0.8309	1.40077	0.0000905	233.76	0.021	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	729.27	1.120	0.9046	2484.788	1.0365	0.9062	-1284.6	2460.98	54.53
LPC	82.51	1.519	0.8349	2484.788	1.1520	0.8444	-606.4	6.71	3.29
HPC	53.18	5.999	0.8171	8931.188	1.8061	0.8558	-3379.4	61.40	57.97
HPT	12.08	4.100	0.8733	219.546	1.3607	0.8508	3379.4		
LPT	53.84	2.727	0.8453	69.446	1.2534	0.8258	1891.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	847.34	1.117	0.9065	2461.096	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	70.29	1.485	0.7760	0.656	0.0000	1.1738	1.0700	1.0760	0.0003
HPC	48.36	5.763	0.8255	8693.089	10.9845	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.014	0.8732	1.319	4.0136	12.6299	0.9723	1.0000	0.0003
LPT	0.83	2.299	0.8515	0.781	2.2992	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2563.86	5656.1

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2740	860.21
FanDuct	0.0000	0.5404	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8384	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8992.9	1973.7	3379.4
LP_Shaft	2313.6	4292.6	1891.0

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8711	739.43	14.65	9.416
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2769	739.43	14.65	3.452
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	718.18	9.48	13.830
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	849.31	41.54	27.000
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	718.18	9.48	13.830
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	949.74	66.36	39.511
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	718.18	9.48	13.830

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6301	525.86	-37.06	6.587
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.7027	949.74	66.36	38.601
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3649	949.74	66.36	21.907
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	949.74	66.36	39.511
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	949.74	66.36	39.511
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	949.74	66.36	39.511
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	466.07	-18.95	4.858
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	466.07	-18.95	4.858
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	466.07	-18.95	4.858
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	466.07	-18.95	4.858

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1677.75	0.9995	0.0230	0.18827	0.01085

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.118	0.9801	1.0000	0.9800	613.40	0.404	566.4	420.0
Byp_Nozz	1.573	0.9800	1.0000	0.9800	2006.86	0.831	808.6	5875.1

```
**********************************************************************************************************************************
Date:07/05/13    Time:11:14:19    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 26/ 1/10    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 456.59    Stator 1 exit: 463.04    Stator 2 inlet: 471.10    Stator 2 exit: 475.24
            Stator 3 inlet: 483.51    Stator 3 exit: 487.22    Stator 4 inlet: 494.93    Stator 4 exit: 498.06
            Stator 5 inlet: 504.37    Stator 5 exit: 507.07            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.01
Fan Bypass Relative Humidity       2.24
LPC Inlet Relative Humidity        2.00
LPC Exit Relative Humidity         0.21
HPC Relative Humidity              0.06
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          667.90    Fan/LPC Inlet Flow Velocity        171.39
Ambient Static Pressure          3.58    Fan/LPC Inlet Static Pressure        4.74
Ambient Static Temperature     414.42    Fan/LPC Inlet Static Temperature   449.16
Additional Water at LPC Exit   0.0050695
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.669	34281.0	18.00	278.85	693.3	1.0485	726.93	8.9096	667.90	8.771	0.795	10.000	1669.0	1577.3	1101.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	278.85	4.831	451.61	-22.45	0.0000	791.52	3.578	414.42	2579.9	0.6690	1.40088	0.0000348	278.84	0.010	0.0000
FS1	Inlet.Fl_O	278.85	4.831	451.61	-22.45	0.0000	791.52	4.452	441.18	4168.2	0.3434	1.40088	0.0000348	278.84	0.010	0.0000
FS12	Splitter.Fl_02	250.71	4.829	451.61	-22.45	0.0000	712.00	4.396	439.65	3531.8	0.3683	1.40088	0.0000348	250.70	0.009	0.0000
FS2	Splitter.Fl_01	28.14	4.829	451.61	-22.45	0.0000	79.91	4.738	449.16	830.5	0.1649	1.40088	0.0000348	28.14	0.001	0.0000
FS14	Fan.Fl_O	250.71	5.369	467.01	-18.76	0.0000	651.15	4.577	446.16	2606.7	0.4829	1.40078	0.0000348	250.70	0.009	0.0000
FS23	LPC.Fl_O	28.14	7.150	515.75	-7.08	0.0000	57.68	6.859	509.66	412.6	0.2442	1.40027	0.0000348	28.14	0.001	0.0000
FS24	VaporIN.Fl_O	28.28	7.150	522.79	-34.51	0.0000	58.36	6.851	516.45	412.6	0.2479	1.39948	0.0051043	28.14	0.144	0.0051
FS25	Bleed2.Fl_O	25.45	7.150	522.79	-34.51	0.0000	52.53	6.910	517.71	412.6	0.2214	1.39948	0.0051043	25.32	0.129	0.0051
FS3	HPC.Fl_O	24.22	42.371	941.47	67.54	0.0000	11.32	37.330	908.93	49.7	0.4314	1.38344	0.0051043	24.10	0.123	0.0051
FS36	Bleed3.Fl_O	18.77	42.371	941.47	67.54	0.0000	8.77	39.475	923.16	49.3	0.3214	1.38344	0.0051043	18.67	0.095	0.0051
FS4	Burner.Fl_O	18.97	41.395	1669.03	55.63	0.0108	12.08	39.082	1645.17	74.6	0.2947	1.33322	0.0051043	18.67	0.095	0.0181
FS45	HPT.Fl_O	25.36	10.206	1105.90	-43.21	0.0081	53.32	9.295	1078.39	265.4	0.3719	1.36771	0.0051043	25.03	0.128	0.0149
FS49	LPT.Fl_O	25.66	3.944	892.20	-95.45	0.0080	125.38	3.768	881.04	860.2	0.2578	1.38107	0.0051043	25.32	0.129	0.0148
FS5	TEGV.Fl_O	25.66	3.944	892.27	-95.45	0.0080	125.39	3.768	881.11	860.2	0.2578	1.38107	0.0051043	25.32	0.129	0.0148
FS8	Core_Nozz.Fl_O	25.66	3.944	892.34	-95.45	0.0080	125.39	3.578	868.66	613.4	0.3779	1.38106	0.0051043	25.32	0.129	0.0148
FS17	FanDuctLkg.Fl_O	250.71	5.369	467.01	-18.76	0.0000	651.15	4.577	446.16	2606.7	0.4829	1.40078	0.0000348	250.70	0.009	0.0000
FS171	Bleed15.Fl_O	253.54	5.369	467.64	-18.94	0.0000	658.93	4.446	443.05	2481.9	0.5262	1.40077	0.0000911	253.52	0.023	0.0001
FS172	FanDuct.Fl_O	253.54	5.369	467.64	-18.94	0.0000	658.93	4.446	443.05	2481.9	0.5262	1.40077	0.0000911	253.52	0.023	0.0001
FS173	Byp_Nozz.Fl_O	253.54	5.369	467.64	-18.94	0.0000	658.93	3.578	416.36	2006.9	0.7838	1.40077	0.0000911	253.52	0.023	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	712.00	1.112	0.9038	2406.933	1.0341	0.9052	-1309.4	4933.57	54.09
LPC	79.91	1.481	0.8366	2406.933	1.1420	0.8454	-612.1	6.45	3.08
HPC	52.53	5.926	0.8159	8909.850	1.8009	0.8546	-3586.1	61.64	58.15
HPT	12.08	4.056	0.8727	218.955	1.3577	0.8503	3586.1		
LPT	53.32	2.588	0.8405	67.537	1.2373	0.8217	1921.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	827.28	1.109	0.9056	2383.983	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	66.92	1.450	0.7723	0.636	0.0000	1.1940	1.0684	1.0832	0.0003
HPC	47.77	5.694	0.8243	8672.320	10.9775	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.971	0.8727	1.316	3.9712	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.194	0.8467	0.760	2.1942	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2579.94	5788.7
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2578	860.21
FanDuct	0.0000	0.5262	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.9096	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8945.1	2105.6	3586.1
LP_Shaft	2245.9	4493.3	1921.4

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9367	733.69	16.52	10.206
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2978	733.69	16.52	3.944
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	712.71	11.42	14.899
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	842.24	43.05	28.987
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	712.71	11.42	14.899
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	941.47	67.54	42.371
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	712.71	11.42	14.899

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.8282	522.79	-34.51	7.150
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.9063	941.47	67.54	41.395
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.5431	941.47	67.54	23.555
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	941.47	67.54	42.371
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	941.47	67.54	42.371
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	941.47	67.54	42.371
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	467.01	-18.76	5.369
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	467.01	-18.76	5.369
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	467.01	-18.76	5.369
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	467.01	-18.76	5.369

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1668.97	0.9995	0.0230	0.20192	0.01081

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.102	0.9801	1.0000	0.9800	613.40	0.378	532.5	424.6
Byp_Nozz	1.501	0.9800	1.0000	0.9800	2006.86	0.784	768.7	6057.4

```
**********************************************************************************************************************************
Date:07/05/13    Time:11:14:46    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 17/ 45/ 2/14    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 465.23    Stator 1 exit: 470.82    Stator 2 inlet: 477.74    Stator 2 exit: 481.11
            Stator 3 inlet: 488.30    Stator 3 exit: 491.27    Stator 4 inlet: 498.01    Stator 4 exit: 500.46
            Stator 5 inlet: 505.89    Stator 5 exit: 507.95            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.97
Fan Bypass Relative Humidity       3.10
LPC Inlet Relative Humidity        2.83
LPC Exit Relative Humidity         0.45
HPC Relative Humidity              0.07
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          617.99    Fan/LPC Inlet Flow Velocity        173.41
Ambient Static Pressure          4.36    Fan/LPC Inlet Static Pressure        5.49
Ambient Static Temperature     429.58    Fan/LPC Inlet Static Temperature   458.91
Additional Water at LPC Exit   0.0051374

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.608   30029.0    18.00    305.45      755.2    1.0510     793.73    8.4645    617.99     8.214     0.828         10.000    1673.3   1580.9   1107.2


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht       FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O          305.45     5.595    461.42    -20.30    0.0000    756.70     4.358    429.58    2599.2  0.6080   1.40081   0.0000681    305.43    0.021    0.0001
FS1   Inlet.Fl_O            305.45     5.595    461.42    -20.30    0.0000    756.70     5.198    451.79    4168.2  0.3260   1.40081   0.0000681    305.43    0.021    0.0001
FS12  Splitter.Fl_02        273.17     5.592    461.42    -20.30    0.0000    677.08     5.145    450.53    3531.8  0.3472   1.40081   0.0000681    273.16    0.019    0.0001
FS2   Splitter.Fl_01         32.27     5.592    461.42    -20.30    0.0000     79.99     5.487    458.91     830.5  0.1651   1.40081   0.0000681     32.27    0.002    0.0001
FS14  Fan.Fl_O              273.17     6.149    475.48    -16.93    0.0000    625.13     5.327    456.36    2606.7  0.4572   1.40070   0.0000681    273.16    0.019    0.0001
FS23  LPC.Fl_O               32.27     7.863    516.86     -7.01    0.0000     60.21     7.513    510.18     412.6  0.2559   1.40025   0.0000681     32.27    0.002    0.0001
FS24  VaporIN.Fl_O           32.44     7.863    523.98    -34.80    0.0000     60.94     7.503    517.01     412.6  0.2597   1.39945   0.0052055     32.27    0.168    0.0052
FS25  Bleed2.Fl_O            27.57     7.863    523.98    -34.80    0.0000     51.80     7.607    519.05     412.6  0.2182   1.39945   0.0052055     27.43    0.143    0.0052
FS3   HPC.Fl_O               26.24    45.960    940.22     66.66    0.0000     11.29    40.516    907.88      49.7  0.4304   1.38350   0.0052055     26.10    0.136    0.0052
FS36  Bleed3.Fl_O            20.33    45.960    940.22     66.66    0.0000      8.75    42.832    922.01      49.3  0.3206   1.38350   0.0052055     20.23    0.105    0.0052
FS4   Burner.Fl_O            20.55    44.901   1673.26     54.66    0.0109     12.08    42.392   1649.36      74.6  0.2947   1.33294   0.0052055     20.23    0.105    0.0183
FS45  HPT.Fl_O               27.47    11.224   1111.42    -43.56    0.0081     52.65    10.249   1084.58     265.4  0.3666   1.36729   0.0052055     27.11    0.141    0.0150
FS49  LPT.Fl_O               27.79     4.720    915.41    -91.41    0.0080    114.97     4.544    905.91     860.2  0.2349   1.37966   0.0052055     27.43    0.143    0.0149
FS5   TEGV.Fl_O              27.79     4.720    915.48    -91.41    0.0080    114.98     4.544    905.98     860.2  0.2349   1.37966   0.0052055     27.43    0.143    0.0149
FS8   Core_Nozz.Fl_O         27.79     4.720    915.55    -91.41    0.0080    114.98     4.358    895.69     613.4  0.3415   1.37965   0.0052055     27.43    0.143    0.0149
FS17  FanDuctLkg.Fl_O       273.17     6.149    475.48    -16.93    0.0000    625.13     5.327    456.36    2606.7  0.4572   1.40070   0.0000681    273.16    0.019    0.0001
FS171 Bleed15.Fl_O          278.04     6.149    476.33    -17.24    0.0000    636.83     5.179    453.50    2481.9  0.5012   1.40068   0.0001576    278.00    0.044    0.0002
FS172 FanDuct.Fl_O          278.04     6.149    476.33    -17.24    0.0000    636.83     5.179    453.50    2481.9  0.5012   1.40068   0.0001576    278.00    0.044    0.0002
FS173 Byp_Nozz.Fl_O         278.04     6.149    476.33    -17.24    0.0000    636.83     4.358    431.66    2006.9  0.7185   1.40068   0.0001576    278.00    0.044    0.0002

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff        Nc       TR   efPoly        pwr       SMN      SMW
Fan       677.08   1.099    0.9028  2261.160   1.0305   0.9041    -1302.1  -----.--    52.63
LPC        79.99   1.406    0.8519  2261.160   1.1202   0.8589     -606.9      5.94     2.66
HPC        51.80   5.845    0.8144  8885.964   1.7944   0.8532    -3862.2     61.93    58.35
HPT        12.08   4.001    0.8728   218.341   1.3535   0.8508     3862.2
LPT        52.65   2.378    0.8324    63.972   1.2116   0.8147     1909.1

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan        786.70   1.097   0.9046  2239.600    0.0417      0.8607    1.0235    0.9980    0.9905
LPC         60.72   1.386   0.7658     0.597    0.0000      1.3175    1.0522    1.1125    0.0003
HPC         47.11   5.617   0.8228  8649.070   10.9695      1.0995    1.0494    0.9898    0.9733
HPT          0.96   3.917   0.8728     1.312    3.9175     12.6299    0.9723    1.0000    0.0003
LPT          0.81   2.037   0.8386     0.720    2.0365     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2599.17	5867.0
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2349	860.21
FanDuct	0.0000	0.5012	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.4645	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8931.3	2271.2	3862.2
LP_Shaft	2132.7	4701.4	1909.1

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0147	733.64	15.93	11.224
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3226	733.64	15.93	4.720
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	712.78	10.86	16.244
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	841.56	42.31	31.483
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	712.78	10.86	16.244
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	940.22	66.66	45.960
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	712.78	10.86	16.244

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1500	1.0000	1.0000	4.8658	523.98	-34.80	7.863
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.1483	940.22	66.66	44.901
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.7548	940.22	66.66	25.638
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	940.22	66.66	45.960
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	940.22	66.66	45.960
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	940.22	66.66	45.960
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	475.48	-16.93	6.149
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	475.48	-16.93	6.149
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	475.48	-16.93	6.149
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	475.48	-16.93	6.149

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1673.20	0.9995	0.0230	0.22048	0.01090

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.083	0.9801	1.0000	0.9800	613.40	0.341	488.3	421.8
Byp_Nozz	1.411	0.9800	1.0000	0.9800	2006.86	0.719	717.5	6200.4

```
**********************************************************************************************************************************
Date:07/05/13    Time:11:15:17    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 22/ 50/ 2/19    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 473.27    Stator 1 exit: 477.40    Stator 2 inlet: 482.10    Stator 2 exit: 483.97
            Stator 3 inlet: 489.18    Stator 3 exit: 490.64    Stator 4 inlet: 495.62    Stator 4 exit: 496.68
            Stator 5 inlet: 500.34    Stator 5 exit: 501.11            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.83
Fan Bypass Relative Humidity       3.92
LPC Inlet Relative Humidity        3.81
LPC Exit Relative Humidity         1.16
HPC Relative Humidity              0.08
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity           571.13    Fan/LPC Inlet Flow Velocity        193.27
Ambient Static Pressure           5.30    Fan/LPC Inlet Static Pressure        6.36
Ambient Static Temperature      445.14    Fan/LPC Inlet Static Temperature   469.21
Additional Water at LPC Exit    0.0046325
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.552	25666.0	18.00	330.91	775.1	1.0929	847.06	7.1100	571.13	7.359	0.859	10.000	1681.9	1587.3	1116.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	330.91	6.516	472.33	-18.03	0.0000	712.17	5.297	445.14	2597.9	0.5520	1.40072	0.0001274	330.87	0.042	0.0001
FS1	Inlet.Fl_O	330.91	6.516	472.33	-18.03	0.0000	712.17	6.110	463.71	4168.2	0.3044	1.40072	0.0001274	330.87	0.042	0.0001
FS12	Splitter.Fl_02	290.11	6.513	472.33	-18.03	0.0000	624.67	6.076	463.03	3531.8	0.3165	1.40072	0.0001274	290.07	0.037	0.0001
FS2	Splitter.Fl_01	40.80	6.513	472.33	-18.03	0.0000	87.86	6.364	469.21	830.5	0.1820	1.40072	0.0001274	40.80	0.005	0.0001
FS14	Fan.Fl_O	290.11	7.066	484.65	-15.07	0.0000	583.25	6.264	468.24	2606.7	0.4183	1.40061	0.0001274	290.07	0.037	0.0001
FS23	LPC.Fl_O	40.80	8.252	512.38	-8.42	0.0000	72.22	7.710	502.53	412.6	0.3128	1.40030	0.0001274	40.80	0.005	0.0001
FS24	VaporIN.Fl_O	40.99	8.252	518.87	-33.48	0.0000	73.02	7.696	508.64	412.6	0.3173	1.39958	0.0047599	40.80	0.194	0.0047
FS25	Bleed2.Fl_O	28.69	8.252	518.87	-33.48	0.0000	51.11	7.990	514.12	412.6	0.2151	1.39958	0.0047599	28.56	0.136	0.0047
FS3	HPC.Fl_O	27.30	47.950	930.01	66.64	0.0000	11.20	42.378	898.61	49.7	0.4258	1.38416	0.0047599	27.17	0.129	0.0047
FS36	Bleed3.Fl_O	21.16	47.950	930.01	66.64	0.0000	8.68	44.745	912.30	49.3	0.3176	1.38416	0.0047599	21.06	0.100	0.0047
FS4	Burner.Fl_O	21.39	46.846	1681.87	54.34	0.0112	12.09	44.227	1657.86	74.6	0.2948	1.33241	0.0047599	21.06	0.100	0.0182
FS45	HPT.Fl_O	28.59	12.061	1121.21	-42.45	0.0083	51.23	11.075	1095.83	265.4	0.3549	1.36658	0.0047599	28.22	0.134	0.0149
FS49	LPT.Fl_O	28.93	5.629	946.68	-84.93	0.0082	102.03	5.466	939.07	860.2	0.2071	1.37772	0.0047599	28.56	0.136	0.0147
FS5	TEGV.Fl_O	28.93	5.629	946.75	-84.93	0.0082	102.04	5.466	939.14	860.2	0.2071	1.37772	0.0047599	28.56	0.136	0.0147
FS8	Core_Nozz.Fl_O	28.93	5.629	946.82	-84.93	0.0082	102.04	5.297	931.14	613.4	0.2984	1.37771	0.0047599	28.56	0.136	0.0147
FS17	FanDuctLkg.Fl_O	290.11	7.066	484.65	-15.07	0.0000	583.25	6.264	468.24	2606.7	0.4183	1.40061	0.0001274	290.07	0.037	0.0001
FS171	Bleed15.Fl_O	302.40	7.066	486.05	-15.82	0.0000	608.85	6.068	465.34	2481.9	0.4713	1.40057	0.0003149	302.31	0.095	0.0003
FS172	FanDuct.Fl_O	302.40	7.066	486.05	-15.82	0.0000	608.85	6.068	465.34	2481.9	0.4713	1.40057	0.0003149	302.31	0.095	0.0003
FS173	Byp_Nozz.Fl_O	302.40	7.066	486.05	-15.82	0.0000	608.85	5.297	447.59	2006.9	0.6549	1.40057	0.0003149	302.31	0.095	0.0003

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	624.67	1.085	0.9039	2054.570	1.0261	0.9050	-1212.6	-2862.02	49.81
LPC	87.86	1.267	0.8256	2054.570	1.0848	0.8314	-554.4	6.36	2.41
HPC	51.11	5.811	0.8137	8864.644	1.7924	0.8526	-3966.1	61.03	57.40
HPT	12.09	3.884	0.8741	216.197	1.3450	0.8528	3966.2		
LPT	51.23	2.142	0.8229	58.554	1.1815	0.8067	1766.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	725.81	1.083	0.9057	2034.980	0.0426	0.8607	1.0235	0.9980	0.9905
LPC	53.80	1.315	0.7610	0.543	0.0000	1.6329	0.8487	1.0850	0.0003
HPC	46.49	5.584	0.8221	8628.318	11.0332	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.804	0.8741	1.299	3.8043	12.6299	0.9723	1.0000	0.0003
LPT	0.78	1.859	0.8290	0.659	1.8593	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2597.91	5874.0
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2071	860.21
FanDuct	0.0000	0.4713	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.1100	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8866.4	2349.4	3966.2
LP_Shaft	1960.6	4733.2	1766.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0559	725.91	16.58	12.061
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3357	725.91	16.58	5.629
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	705.31	11.57	16.985
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	832.52	42.61	32.865
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	705.31	11.57	16.985
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	930.01	66.64	47.950
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	705.31	11.57	16.985

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.3000	1.0000	1.0000	12.2974	518.87	-33.48	8.252
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.2763	930.01	66.64	46.846
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.8668	930.01	66.64	26.949
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	930.01	66.64	47.950
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	930.01	66.64	47.950
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	930.01	66.64	47.950
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	484.65	-15.07	7.066
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	484.65	-15.07	7.066
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	484.65	-15.07	7.066
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	484.65	-15.07	7.066

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1681.80	0.9995	0.0230	0.23529	0.01117

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.063	0.9801	1.0000	0.9800	613.40	0.298	434.7	390.8
Byp_Nozz	1.334	0.9800	1.0000	0.9800	2006.86	0.655	665.8	6258.3

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*******************************************************************************************************************************
Date:07/05/13    Time:11:15:53    Model:                                  Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 33/ 61/ 2/30    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 486.43    Stator 1 exit: 489.44    Stator 2 inlet: 492.29    Stator 2 exit: 493.11
            Stator 3 inlet: 496.53    Stator 3 exit: 496.92    Stator 4 inlet: 500.25    Stator 4 exit: 500.33
            Stator 5 inlet: 502.26    Stator 5 exit: 502.15             Unblocked   Percent Blockage: 0.00
```

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	5.86		
Fan Bypass Relative Humidity	4.89		
LPC Inlet Relative Humidity	5.02		
LPC Exit Relative Humidity	2.54		
HPC Relative Humidity	0.09		
Drop Diameter	0.0000050	Inlet Length	40.00
Ambient Flow Velocity	518.26	Fan/LPC Inlet Flow Velocity	203.16
Ambient Static Pressure	6.74	Fan/LPC Inlet Static Pressure	7.75
Ambient Static Temperature	465.18	Fan/LPC Inlet Static Temperature	484.12
Additional Water at LPC Exit	0.0050450		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.490	20047.0	18.00	368.61	863.8	1.0938	944.87	6.2869	518.26	6.484	0.890	10.000	1716.0	1617.4	1148.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	368.61	7.943	487.56	-15.16	0.0000	661.20	6.740	465.18	2619.3	0.4900	1.40057	0.0002627	368.52	0.097	0.0003
FS1	Inlet.Fl_O	368.61	7.943	487.56	-15.16	0.0000	661.20	7.521	480.00	4168.2	0.2803	1.40057	0.0002627	368.52	0.097	0.0003
FS12	Splitter.Fl_02	318.03	7.939	487.56	-15.16	0.0000	570.75	7.500	479.69	3531.8	0.2861	1.40057	0.0002627	317.94	0.084	0.0003
FS2	Splitter.Fl_01	50.59	7.939	487.56	-15.16	0.0000	90.78	7.745	484.12	830.5	0.1883	1.40057	0.0002627	50.57	0.013	0.0003
FS14	Fan.Fl_O	318.03	8.522	498.58	-12.52	0.0000	537.67	7.719	484.66	2606.7	0.3786	1.40045	0.0002627	317.94	0.084	0.0003
FS23	LPC.Fl_O	50.59	9.130	515.91	-8.36	0.0000	81.21	8.356	503.00	412.6	0.3581	1.40023	0.0002627	50.57	0.013	0.0003
FS24	VaporIN.Fl_O	50.84	9.130	522.91	-35.64	0.0000	82.17	8.332	509.44	412.6	0.3638	1.39945	0.0053078	50.57	0.268	0.0053
FS25	Bleed2.Fl_O	30.50	9.130	522.91	-35.64	0.0000	49.30	8.861	518.47	412.6	0.2071	1.39945	0.0053078	30.34	0.161	0.0053
FS3	HPC.Fl_O	29.02	51.507	930.22	63.61	0.0000	11.09	45.661	899.59	49.7	0.4205	1.38407	0.0053078	28.87	0.153	0.0053
FS36	Bleed3.Fl_O	22.49	51.507	930.22	63.61	0.0000	8.59	48.139	912.91	49.3	0.3140	1.38407	0.0053078	22.38	0.119	0.0053
FS4	Burner.Fl_O	22.76	50.321	1716.02	50.74	0.0117	12.09	47.505	1691.63	74.6	0.2952	1.33033	0.0053078	22.38	0.119	0.0194
FS45	HPT.Fl_O	30.41	13.596	1152.90	-44.99	0.0088	49.01	12.589	1129.41	265.4	0.3375	1.36417	0.0053078	29.99	0.159	0.0159
FS49	LPT.Fl_O	30.77	7.051	997.43	-82.80	0.0086	88.92	6.897	991.44	860.2	0.1796	1.37425	0.0053078	30.34	0.161	0.0158
FS5	TEGV.Fl_O	30.77	7.051	997.50	-82.80	0.0086	88.93	6.897	991.51	860.2	0.1796	1.37425	0.0053078	30.34	0.161	0.0158
FS8	Core_Nozz.Fl_O	30.77	7.051	997.57	-82.80	0.0086	88.93	6.740	985.38	613.4	0.2569	1.37424	0.0053078	30.34	0.161	0.0158
FS17	FanDuctLkg.Fl_O	318.03	8.522	498.58	-12.52	0.0000	537.67	7.719	484.66	2606.7	0.3786	1.40045	0.0002627	317.94	0.084	0.0003
FS171	Bleed15.Fl_O	338.36	8.522	500.04	-13.91	0.0000	572.90	7.482	481.77	2481.9	0.4352	1.40039	0.0005645	338.17	0.191	0.0006
FS172	FanDuct.Fl_O	338.36	8.522	500.04	-13.91	0.0000	572.90	7.482	481.77	2481.9	0.4352	1.40039	0.0005645	338.17	0.191	0.0006
FS173	Byp_Nozz.Fl_O	338.36	8.522	500.04	-13.91	0.0000	572.90	6.740	467.59	2006.9	0.5886	1.40039	0.0005645	338.17	0.191	0.0006

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	570.75	1.073	0.9059	1859.517	1.0226	0.9069	-1189.0	-1898.08	46.37
LPC	90.78	1.150	0.7009	1859.517	1.0582	0.7067	-486.8	6.92	2.24
HPC	49.30	5.641	0.8098	8806.179	1.7789	0.8490	-4179.6	60.83	57.00
HPT	12.09	3.701	0.8764	213.449	1.3304	0.8563	4179.6		
LPT	49.01	1.928	0.8161	53.097	1.1526	0.8019	1675.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	663.16	1.072	0.9077	1841.787	0.0439	0.8607	1.0235	0.9980	0.9905
LPC	47.37	1.250	0.7561	0.491	0.0000	1.9165	0.6000	0.9269	0.0003
HPC	44.84	5.423	0.8182	8571.412	11.0706	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.626	0.8764	1.283	3.6262	12.6299	0.9723	1.0000	0.0003
LPT	0.75	1.698	0.8222	0.597	1.6982	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2619.30	5937.6

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1796	860.21
FanDuct	0.0000	0.4352	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.2869	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8842.1	2482.6	4179.6
LP_Shaft	1802.9	4881.7	1675.7

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.1226	728.02	13.99	13.596
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3569	728.02	13.99	7.051
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	707.61	9.02	18.453
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	833.64	39.79	35.404
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	707.61	9.02	18.453
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	930.22	63.61	51.507
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	707.61	9.02	18.453

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.4000	1.0000	1.0000	20.3362	522.91	-35.64	9.130
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.4830	930.22	63.61	50.321
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	3.0477	930.22	63.61	29.314
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	930.22	63.61	51.507
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	930.22	63.61	51.507
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	930.22	63.61	51.507
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	498.58	-12.52	8.522
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	498.58	-12.52	8.522
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	498.58	-12.52	8.522
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	498.58	-12.52	8.522

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1715.97	0.9995	0.0230	0.26246	0.01173

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.046	0.9801	1.0000	0.9800	613.40	0.257	384.6	367.8
Byp_Nozz	1.264	0.9800	1.0000	0.9800	2006.86	0.589	611.8	6433.7

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Date:07/05/13 Time:11:16:32 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0

Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 45/ 73/ 2/42 Run by: Philip C Jorgenson PC: 10

Temperature Stator 1 inlet: 500.42 Stator 1 exit: 502.83 Stator 2 inlet: 505.20 Stator 2 exit: 505.94

Stator 3 inlet: 508.67 Stator 3 exit: 509.07 Stator 4 inlet: 511.74 Stator 4 exit: 511.95

Stator 5 inlet: 513.62 Stator 5 exit: 513.67 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	6.54		
Fan Bypass Relative Humidity	5.94		
LPC Inlet Relative Humidity	5.70		
LPC Exit Relative Humidity	3.33		
HPC Relative Humidity	0.15		
Drop Diameter	0.0000050	Inlet Length	40.00
Ambient Flow Velocity	479.99	Fan/LPC Inlet Flow Velocity	172.31
Ambient Static Pressure	8.15	Fan/LPC Inlet Static Pressure	9.18
Ambient Static Temperature	481.63	Fan/LPC Inlet Static Temperature	498.34
Additional Water at LPC Exit	0.0062740		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.446	15435.0	18.00	387.48	679.7	1.3219	898.46	6.8471	479.99	5.320	0.902	10.000	1670.4	1573.8	1140.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	387.48	9.342	500.81	-13.05	0.0000	598.97	8.149	481.63	2546.1	0.4460	1.40040	0.0004484	387.31	0.174	0.0004
FS1	Inlet.Fl_O	387.48	9.342	500.81	-13.05	0.0000	598.97	8.939	494.54	4168.2	0.2517	1.40040	0.0004484	387.31	0.174	0.0004
FS12	Splitter.Fl_02	338.10	9.337	500.81	-13.05	0.0000	522.90	8.909	494.13	3531.8	0.2600	1.40040	0.0004484	337.95	0.152	0.0004
FS2	Splitter.Fl_01	49.38	9.337	500.81	-13.05	0.0000	76.37	9.177	498.34	830.5	0.1574	1.40040	0.0004484	49.36	0.022	0.0004
FS14	Fan.Fl_O	338.10	9.826	508.99	-11.09	0.0000	500.92	9.036	496.93	2606.7	0.3483	1.40030	0.0004484	337.95	0.152	0.0004
FS23	LPC.Fl_O	49.38	10.483	523.69	-7.56	0.0000	69.56	9.848	514.42	412.6	0.2999	1.40010	0.0004484	49.36	0.022	0.0004
FS24	VaporIN.Fl_O	49.69	10.483	532.27	-41.45	0.0000	70.57	9.826	522.53	412.6	0.3056	1.39912	0.0067224	49.36	0.332	0.0067
FS25	Bleed2.Fl_O	29.81	10.483	532.27	-41.45	0.0000	42.34	10.257	528.97	412.6	0.1767	1.39912	0.0067224	29.61	0.199	0.0067
FS3	HPC.Fl_O	28.37	49.699	902.08	48.69	0.0000	11.06	44.087	872.46	49.7	0.4191	1.38547	0.0067224	28.18	0.189	0.0067
FS36	Bleed3.Fl_O	21.98	49.699	902.08	48.69	0.0000	8.57	46.463	885.33	49.3	0.3131	1.38547	0.0067224	21.84	0.147	0.0067
FS4	Burner.Fl_O	22.23	48.554	1670.35	36.33	0.0114	12.08	45.841	1646.52	74.6	0.2948	1.33250	0.0067224	21.84	0.147	0.0204
FS45	HPT.Fl_O	29.71	14.322	1144.85	-50.47	0.0085	45.30	13.427	1125.25	265.4	0.3088	1.36464	0.0067224	29.27	0.197	0.0170
FS49	LPT.Fl_O	30.06	8.400	1018.64	-80.92	0.0084	73.71	8.275	1014.49	860.2	0.1481	1.37285	0.0067224	29.61	0.199	0.0169
FS5	TEGV.Fl_O	30.06	8.400	1018.71	-80.92	0.0084	73.71	8.275	1014.56	860.2	0.1481	1.37284	0.0067224	29.61	0.199	0.0169
FS8	Core_Nozz.Fl_O	30.06	8.400	1018.78	-80.92	0.0084	73.71	8.149	1010.43	613.3	0.2105	1.37284	0.0067224	29.61	0.199	0.0169
FS17	FanDuctLkg.Fl_O	338.10	9.826	508.99	-11.09	0.0000	500.92	9.036	496.93	2606.7	0.3483	1.40030	0.0004484	337.95	0.152	0.0004
FS171	Bleed15.Fl_O	357.98	9.826	510.29	-12.77	0.0000	531.04	8.820	494.77	2481.9	0.3959	1.40023	0.0007946	357.70	0.284	0.0008
FS172	FanDuct.Fl_O	357.98	9.826	510.29	-12.77	0.0000	531.04	8.820	494.77	2481.9	0.3959	1.40023	0.0007946	357.70	0.284	0.0008
FS173	Byp_Nozz.Fl_O	357.98	9.826	510.29	-12.77	0.0000	531.04	8.149	483.71	2006.9	0.5240	1.40023	0.0007946	357.70	0.284	0.0008

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	522.90	1.052	0.9000	1622.380	1.0163	0.9007	-938.7	-1530.50	44.70
LPC	76.37	1.123	0.7362	1622.380	1.0457	0.7405	-383.4	8.18	1.95
HPC	42.34	4.741	0.7956	8545.229	1.6948	0.8340	-3709.9	68.50	63.29
HPT	12.08	3.390	0.8682	211.807	1.3030	0.8485	3709.9		
LPT	45.30	1.705	0.8029	47.116	1.1204	0.7907	1322.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	607.56	1.051	0.9018	1606.910	0.0442	0.8607	1.0235	0.9980	0.9905
LPC	40.07	1.188	0.7484	0.429	0.0000	1.9057	0.6541	0.9837	0.0003
HPC	38.51	4.565	0.8038	8317.419	10.7439	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.324	0.8682	1.273	3.3240	12.6299	0.9723	1.0000	0.0003
LPT	0.69	1.530	0.8089	0.530	1.5303	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2546.12	5780.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1481	860.21
FanDuct	0.0000	0.3959	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.8471	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8656.5	2250.9	3709.9
LP_Shaft	1594.2	4355.9	1322.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0971	718.34	3.62	14.322
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3488	718.34	3.62	8.400
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	699.82	-0.89	19.110
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	814.26	27.06	34.797
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	699.82	-0.89	19.110
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	902.08	48.69	49.699
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	699.82	-0.89	19.110

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	19.8754	532.27	-41.45	10.483
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.4041	902.08	48.69	48.554
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.9786	902.08	48.69	28.973
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	902.08	48.69	49.699
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	902.08	48.69	49.699
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	902.08	48.69	49.699
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	508.99	-11.09	9.826
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	508.99	-11.09	9.826
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	508.99	-11.09	9.826
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	508.99	-11.09	9.826

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1670.29	0.9995	0.0230	0.24957	0.01143

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.031	0.9801	1.0000	0.9800	613.40	0.210	319.0	298.1
Byp_Nozz	1.206	0.9800	1.0000	0.9800	2006.86	0.524	553.8	6162.3

5µm, 2g/m^3, ISA +27R

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**********************************************************************************************************************************
Date:04/04/13    Time:08:33:20    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 26/ 1/10    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 473.74    Stator 1 exit: 481.44    Stator 2 inlet: 491.10    Stator 2 exit: 496.08
            Stator 3 inlet: 506.00    Stator 3 exit: 510.52    Stator 4 inlet: 519.75    Stator 4 exit: 523.58
            Stator 5 inlet: 531.12    Stator 5 exit: 534.43            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.87
Fan Bypass Relative Humidity       1.31
LPC Inlet Relative Humidity        1.21
LPC Exit Relative Humidity         0.11
HPC Relative Humidity              0.04
Drop Diameter                 0.0000050    Inlet Length                        40.00
Ambient Flow Velocity            781.11    Fan/LPC Inlet Flow Velocity        188.09
Ambient Static Pressure            2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature       416.97    Fan/LPC Inlet Static Temperature   464.88
Additional Water at LPC Exit     0.0065190
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	27.00	254.88	641.4	1.1030	707.49	8.7021	781.11	9.514	0.736	10.000	1748.7	1654.5	1151.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	254.88	4.267	467.83	-18.66	0.0000	833.73	2.854	416.97	2543.5	0.7800	1.40077	0.0000507	254.86	0.013	0.0001
FS1	Inlet.Fl_O	254.88	4.267	467.83	-18.66	0.0000	833.73	3.892	455.67	4168.2	0.3649	1.40077	0.0000507	254.86	0.013	0.0001
FS12	Splitter.Fl_02	228.61	4.265	467.83	-18.66	0.0000	748.17	3.838	453.93	3531.8	0.3910	1.40077	0.0000507	228.59	0.012	0.0001
FS2	Splitter.Fl_01	26.27	4.265	467.83	-18.66	0.0000	85.98	4.171	464.88	830.5	0.1779	1.40077	0.0000507	26.27	0.001	0.0001
FS14	Fan.Fl_O	228.61	4.825	486.40	-14.21	0.0000	674.27	4.048	462.58	2606.7	0.5069	1.40061	0.0000507	228.59	0.012	0.0001
FS23	LPC.Fl_O	26.27	6.679	544.53	-0.27	0.0000	59.23	6.392	537.74	412.6	0.2514	1.39985	0.0000507	26.27	0.001	0.0001
FS24	VaporIN.Fl_O	26.44	6.679	553.21	-35.52	0.0000	60.09	6.382	546.08	412.6	0.2560	1.39881	0.0065697	26.27	0.173	0.0065
FS25	Bleed2.Fl_O	23.80	6.679	553.21	-35.52	0.0000	54.08	6.440	547.51	412.6	0.2286	1.39881	0.0065697	23.64	0.155	0.0065
FS3	HPC.Fl_O	22.64	40.595	1000.91	74.13	0.0000	11.39	35.687	965.97	49.7	0.4357	1.37964	0.0065697	22.50	0.148	0.0065
FS36	Bleed3.Fl_O	17.55	40.595	1000.91	74.13	0.0000	8.82	37.780	981.29	49.3	0.3242	1.37964	0.0065697	17.43	0.115	0.0065
FS4	Burner.Fl_O	17.74	39.660	1748.67	61.66	0.0113	12.07	37.445	1723.93	74.6	0.2951	1.32894	0.0065697	17.43	0.115	0.0201
FS45	HPT.Fl_O	23.72	9.517	1156.08	-44.59	0.0084	54.67	8.617	1125.76	265.4	0.3841	1.36401	0.0065697	23.37	0.154	0.0167
FS49	LPT.Fl_O	23.99	3.263	905.69	-106.38	0.0083	142.79	3.071	890.69	860.2	0.2976	1.37987	0.0065697	23.64	0.155	0.0166
FS5	TEGV.Fl_O	23.99	3.263	905.76	-106.38	0.0083	142.80	3.071	890.76	860.2	0.2976	1.37987	0.0065697	23.64	0.155	0.0166
FS8	Core_Nozz.Fl_O	23.99	3.263	905.84	-106.38	0.0083	142.80	2.854	872.97	613.4	0.4445	1.37986	0.0065697	23.64	0.155	0.0166
FS17	FanDuctLkg.Fl_O	228.61	4.825	486.40	-14.21	0.0000	674.27	4.048	462.58	2606.7	0.5069	1.40061	0.0000507	228.59	0.012	0.0001
FS171	Bleed15.Fl_O	231.25	4.825	487.16	-14.45	0.0000	682.61	3.914	458.86	2481.9	0.5548	1.40059	0.0001248	231.22	0.029	0.0001
FS172	FanDuct.Fl_O	231.25	4.825	487.16	-14.45	0.0000	682.61	3.914	458.86	2481.9	0.5548	1.40059	0.0001248	231.22	0.029	0.0001
FS173	Byp_Nozz.Fl_O	231.25	4.825	487.16	-14.45	0.0000	682.61	2.854	419.20	2006.9	0.8994	1.40059	0.0001248	231.22	0.029	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	748.17	1.131	0.9059	2578.090	1.0397	0.9075	-1439.1	1544.31	54.69
LPC	85.98	1.566	0.8346	2578.090	1.1639	0.8448	-683.7	7.00	3.80
HPC	54.08	6.078	0.8182	8960.188	1.8093	0.8569	-3602.5	61.62	58.27
HPT	12.07	4.167	0.8768	221.291	1.3641	0.8547	3602.5		
LPT	54.67	2.917	0.8555	72.012	1.2747	0.8359	2122.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	869.30	1.128	0.9078	2553.508	0.0415	0.8607	1.0235	0.9980	0.9905
LPC	74.33	1.526	0.7804	0.681	0.0000	1.1567	1.0754	1.0696	0.0003
HPC	49.18	5.839	0.8267	8721.315	10.9601	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.079	0.8767	1.330	4.0795	12.6299	0.9723	1.0000	0.0003
LPT	0.84	2.441	0.8618	0.810	2.4415	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2543.49	6187.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2976	860.21
FanDuct	0.0000	0.5548	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7021	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9253.8	2044.7	3602.5
LP_Shaft	2448.5	4553.5	2122.8

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8757	779.09	19.30	9.517
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2784	779.09	19.30	3.263
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	756.65	13.82	14.140
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	895.07	47.81	27.707
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	756.65	13.82	14.140
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	1000.91	74.13	40.595
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	756.65	13.82	14.140

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6442	553.21	-35.52	6.679
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.7172	1000.91	74.13	39.660
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3776	1000.91	74.13	22.418
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1000.91	74.13	40.595
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1000.91	74.13	40.595
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1000.91	74.13	40.595
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	486.40	-14.21	4.825
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	486.40	-14.21	4.825
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	486.40	-14.21	4.825
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	486.40	-14.21	4.825

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1748.62	0.9995	0.0230	0.19653	0.01127

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.143	0.9801	1.0000	0.9800	613.40	0.445	628.0	468.4
Byp_Nozz	1.691	0.9800	1.0000	0.9800	2006.86	0.899	885.0	6360.8

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**********************************************************************************************************************************
Date:04/04/13    Time:08:33:45    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 39/ 2/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 467.07    Stator 1 exit: 474.28    Stator 2 inlet: 483.32    Stator 2 exit: 487.97
            Stator 3 inlet: 497.25    Stator 3 exit: 501.46    Stator 4 inlet: 510.10    Stator 4 exit: 513.67
            Stator 5 inlet: 520.74    Stator 5 exit: 523.81            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.35
Fan Bypass Relative Humidity       1.69
LPC Inlet Relative Humidity        1.54
LPC Exit Relative Humidity         0.15
HPC Relative Humidity              0.05
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          731.04    Fan/LPC Inlet Flow Velocity        181.64
Ambient Static Pressure          2.95    Fan/LPC Inlet Static Pressure        4.11
Ambient Static Temperature     416.97    Fan/LPC Inlet Static Temperature   458.77
Additional Water at LPC Exit   0.0058255
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.730	38334.0	27.00	248.00	627.9	1.0732	673.92	8.7855	731.04	9.234	0.763	10.000	1720.2	1626.7	1134.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	248.00	4.201	461.52	-20.16	0.0000	818.30	2.947	416.97	2561.1	0.7300	1.40081	0.0000491	247.99	0.012	0.0000
FS1	Inlet.Fl_O	248.00	4.201	461.52	-20.16	0.0000	818.30	3.847	450.03	4168.2	0.3570	1.40081	0.0000491	247.99	0.012	0.0000
FS12	Splitter.Fl_02	222.66	4.199	461.52	-20.16	0.0000	735.05	3.795	448.36	3531.8	0.3827	1.40081	0.0000491	222.65	0.011	0.0000
FS2	Splitter.Fl_01	25.34	4.199	461.52	-20.16	0.0000	83.67	4.112	458.77	830.5	0.1729	1.40081	0.0000491	25.34	0.001	0.0000
FS14	Fan.Fl_O	222.66	4.718	478.81	-16.02	0.0000	666.32	3.981	456.10	2606.7	0.4985	1.40067	0.0000491	222.65	0.011	0.0000
FS23	LPC.Fl_O	25.34	6.437	533.31	-2.95	0.0000	58.67	6.166	526.78	412.6	0.2488	1.40002	0.0000491	25.34	0.001	0.0000
FS24	VaporIN.Fl_O	25.49	6.437	541.20	-34.47	0.0000	59.45	6.157	534.37	412.6	0.2529	1.39910	0.0058747	25.34	0.149	0.0058
FS25	Bleed2.Fl_O	22.94	6.437	541.20	-34.47	0.0000	53.50	6.212	535.74	412.6	0.2259	1.39910	0.0058747	22.81	0.134	0.0058
FS3	HPC.Fl_O	21.83	38.796	977.79	72.25	0.0000	11.35	34.142	943.84	49.7	0.4337	1.38116	0.0058747	21.70	0.127	0.0058
FS36	Bleed3.Fl_O	16.92	38.796	977.79	72.25	0.0000	8.80	36.125	958.70	49.3	0.3229	1.38116	0.0058747	16.82	0.099	0.0058
FS4	Burner.Fl_O	17.11	37.903	1720.20	59.95	0.0111	12.08	35.785	1695.76	74.6	0.2949	1.33045	0.0058747	16.82	0.099	0.0193
FS45	HPT.Fl_O	22.86	9.210	1138.44	-43.42	0.0083	54.05	8.361	1109.32	265.4	0.3785	1.36532	0.0058747	22.54	0.132	0.0159
FS49	LPT.Fl_O	23.13	3.313	902.50	-101.44	0.0082	135.34	3.139	889.19	860.2	0.2804	1.38022	0.0058747	22.81	0.134	0.0158
FS5	TEGV.Fl_O	23.13	3.313	902.57	-101.44	0.0082	135.35	3.139	889.26	860.2	0.2804	1.38022	0.0058747	22.81	0.134	0.0158
FS8	Core_Nozz.Fl_O	23.13	3.313	902.64	-101.44	0.0082	135.35	2.947	873.93	613.4	0.4151	1.38021	0.0058747	22.81	0.134	0.0158
FS17	FanDuctLkg.Fl_O	222.66	4.718	478.81	-16.02	0.0000	666.32	3.981	456.10	2606.7	0.4985	1.40067	0.0000491	222.65	0.011	0.0000
FS171	Bleed15.Fl_O	225.21	4.718	479.52	-16.23	0.0000	674.45	3.856	452.61	2481.9	0.5447	1.40066	0.0001147	225.18	0.026	0.0001
FS172	FanDuct.Fl_O	225.21	4.718	479.52	-16.23	0.0000	674.45	3.856	452.61	2481.9	0.5447	1.40066	0.0001147	225.18	0.026	0.0001
FS173	Byp_Nozz.Fl_O	225.21	4.718	479.52	-16.23	0.0000	674.45	2.947	419.09	2006.9	0.8481	1.40066	0.0001147	225.18	0.026	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	735.05	1.124	0.9051	2513.662	1.0375	0.9067	-1305.3	2076.94	54.57
LPC	83.67	1.533	0.8353	2513.662	1.1555	0.8449	-617.2	6.81	3.37
HPC	53.50	6.027	0.8175	8941.663	1.8067	0.8562	-3380.0	61.49	58.09
HPT	12.08	4.116	0.8754	220.223	1.3611	0.8534	3380.0		
LPT	54.05	2.780	0.8497	70.275	1.2595	0.8304	1922.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	854.05	1.121	0.9070	2489.695	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	71.54	1.498	0.7773	0.664	0.0000	1.1694	1.0709	1.0745	0.0003
HPC	48.66	5.790	0.8260	8703.284	10.9750	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.029	0.8754	1.324	4.0293	12.6299	0.9723	1.0000	0.0003
LPT	0.83	2.339	0.8561	0.791	2.3387	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2561.10	5634.9
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2804	860.21
FanDuct	0.0000	0.5447	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7855	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9133.8	1943.5	3380.0
LP_Shaft	2371.1	4258.3	1922.5

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8443	761.33	18.89	9.210
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2684	761.33	18.89	3.313
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	739.45	13.56	13.556
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	874.47	46.64	26.500
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	739.45	13.56	13.556
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	977.79	72.25	38.796
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	739.45	13.56	13.556

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5492	541.20	-34.47	6.437
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6196	977.79	72.25	37.903
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.2922	977.79	72.25	21.490
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	977.79	72.25	38.796
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	977.79	72.25	38.796
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	977.79	72.25	38.796
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	478.81	-16.02	4.718
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	478.81	-16.02	4.718
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	478.81	-16.02	4.718
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	478.81	-16.02	4.718

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1720.14	0.9995	0.0230	0.18720	0.01113

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.124	0.9801	1.0000	0.9800	613.40	0.415	586.7	421.8
Byp_Nozz	1.601	0.9800	1.0000	0.9800	2006.86	0.848	834.5	5841.1

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**********************************************************************************************************************************
Date:04/04/13    Time:08:34:09    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 39/ 2/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 465.00    Stator 1 exit: 472.02    Stator 2 inlet: 480.81    Stator 2 exit: 485.33
            Stator 3 inlet: 494.36    Stator 3 exit: 498.45    Stator 4 inlet: 506.86    Stator 4 exit: 510.32
            Stator 5 inlet: 517.21    Stator 5 exit: 520.19            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.52
Fan Bypass Relative Humidity       1.84
LPC Inlet Relative Humidity        1.66
LPC Exit Relative Humidity         0.16
HPC Relative Humidity              0.05
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          715.01    Fan/LPC Inlet Flow Velocity        179.15
Ambient Static Pressure          3.09    Fan/LPC Inlet Static Pressure        4.25
Ambient Static Temperature     416.97    Fan/LPC Inlet Static Temperature   456.92
Additional Water at LPC Exit   0.0052577

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.714   37357.0    27.00    254.64      640.0    1.0699     684.75    8.8179    715.01     9.110     0.772         10.000    1707.9   1614.8   1126.6


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht       FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O          254.64     4.339    459.59    -20.61    0.0000    811.78     3.088    416.97    2565.2  0.7140   1.40083   0.0000469    254.62    0.012    0.0000
FS1   Inlet.Fl_O            254.64     4.339    459.59    -20.61    0.0000    811.78     3.980    448.35    4168.2  0.3536   1.40083   0.0000469    254.62    0.012    0.0000
FS12  Splitter.Fl_02        228.70     4.337    459.59    -20.61    0.0000    729.46     3.927    446.72    3531.8  0.3792   1.40083   0.0000469    228.69    0.011    0.0000
FS2   Splitter.Fl_01         25.94     4.337    459.59    -20.61    0.0000     82.72     4.250    456.92     830.5  0.1709   1.40083   0.0000469     25.93    0.001    0.0000
FS14  Fan.Fl_O              228.70     4.859    476.38    -16.59    0.0000    662.88     4.110    454.09    2606.7  0.4949   1.40070   0.0000469    228.69    0.011    0.0000
FS23  LPC.Fl_O               25.94     6.590    529.47     -3.86    0.0000     58.44     6.314    523.05     412.6  0.2478   1.40008   0.0000469     25.93    0.001    0.0000
FS24  VaporIN.Fl_O           26.07     6.590    536.64    -32.31    0.0000     59.14     6.306    529.94     412.6  0.2515   1.39925   0.0053046     25.93    0.138    0.0053
FS25  Bleed2.Fl_O            23.46     6.590    536.64    -32.31    0.0000     53.23     6.362    531.28     412.6  0.2246   1.39925   0.0053046     23.34    0.124    0.0053
FS3   HPC.Fl_O               22.33    39.530    968.70     73.19    0.0000     11.34    34.800    935.12      49.7  0.4330   1.38180   0.0053046     22.21    0.118    0.0053
FS36  Bleed3.Fl_O            17.30    39.530    968.70     73.19    0.0000      8.79    36.815    949.82      49.3  0.3224   1.38180   0.0053046     17.21    0.091    0.0053
FS4   Burner.Fl_O            17.49    38.620   1707.93     60.95    0.0111     12.08    36.462   1683.63      74.6  0.2948   1.33117   0.0053046     17.21    0.091    0.0186
FS45  HPT.Fl_O               23.38     9.425   1130.77    -41.23    0.0082     53.83     8.565   1102.10     265.4  0.3765   1.36594   0.0053046     23.07    0.122    0.0153
FS49  LPT.Fl_O               23.66     3.453    900.41    -97.78    0.0081    132.66     3.279    887.70     860.2  0.2742   1.38046   0.0053046     23.34    0.124    0.0152
FS5   TEGV.Fl_O              23.66     3.453    900.48    -97.78    0.0081    132.66     3.279    887.77     860.2  0.2742   1.38046   0.0053046     23.34    0.124    0.0152
FS8   Core_Nozz.Fl_O         23.66     3.453    900.55    -97.78    0.0081    132.67     3.088    873.26     613.4  0.4048   1.38045   0.0053046     23.34    0.124    0.0152
FS17  FanDuctLkg.Fl_O       228.70     4.859    476.38    -16.59    0.0000    662.88     4.110    454.09    2606.7  0.4949   1.40070   0.0000469    228.69    0.011    0.0000
FS171 Bleed15.Fl_O          231.31     4.859    477.06    -16.77    0.0000    670.92     3.983    450.68    2481.9  0.5405   1.40068   0.0001058    231.28    0.024    0.0001
FS172 FanDuct.Fl_O          231.31     4.859    477.06    -16.77    0.0000    670.92     3.983    450.68    2481.9  0.5405   1.40068   0.0001058    231.28    0.024    0.0001
FS173 Byp_Nozz.Fl_O         231.31     4.859    477.06    -16.77    0.0000    670.92     3.088    419.04    2006.9  0.8311   1.40068   0.0001058    231.28    0.024    0.0001

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff        Nc        TR    efPoly       pwr       SMN      SMW
Fan       729.46   1.120    0.9047  2486.297    1.0365    0.9062   -1301.8  2436.79    54.51
LPC        82.72   1.519    0.8357  2486.297    1.1520    0.8451    -614.8     6.72     3.30
HPC        53.23   5.999    0.8171  8932.753    1.8051    0.8558   -3417.6    61.53    58.10
HPT        12.08   4.097    0.8748   219.859    1.3600    0.8526    3417.6
LPT        53.83   2.730    0.8474    69.599    1.2538    0.8282    1916.6

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan        847.56   1.118   0.9066  2462.591    0.0413      0.8607    1.0235    0.9980    0.9905
LPC         70.36   1.485   0.7761     0.657    0.0000      1.1758    1.0699    1.0768    0.0003
HPC         48.41   5.763   0.8255  8694.612   10.9759      1.0995    1.0494    0.9898    0.9733
HPT          0.96   4.012   0.8748     1.321    4.0116     12.6299    0.9723    1.0000    0.0003
LPT          0.82   2.301   0.8537     0.783    2.3010     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2565.19	5658.9

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2742	860.21
FanDuct	0.0000	0.5405	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8179	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9086.2	1975.5	3417.6
LP_Shaft	2340.4	4301.1	1916.6

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	0.8635	754.44	20.44	9.425
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.2745	754.44	20.44	3.453
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	732.78	15.16	13.837
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	866.42	47.87	27.013
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	732.78	15.16	13.837
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	968.70	73.19	39.530
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	732.78	15.16	13.837

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1000	1.0000	1.0000	2.6072	536.64	-32.31	6.590
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	2.6792	968.70	73.19	38.620
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.3444	968.70	73.19	21.921
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	968.70	73.19	39.530
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	968.70	73.19	39.530
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	968.70	73.19	39.530
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	476.38	-16.59	4.859
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	476.38	-16.59	4.859
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	476.38	-16.59	4.859
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	476.38	-16.59	4.859

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1707.87	0.9995	0.0230	0.19021	0.01105

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.118	0.9801	1.0000	0.9800	613.40	0.405	571.9	420.5
Byp_Nozz	1.573	0.9800	1.0000	0.9800	2006.86	0.831	817.7	5878.4

```
**********************************************************************************************************************************
Date:04/04/13    Time:08:34:25    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 26/ 1/10    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 466.50    Stator 1 exit: 473.07    Stator 2 inlet: 481.29    Stator 2 exit: 485.51
            Stator 3 inlet: 493.94    Stator 3 exit: 497.73    Stator 4 inlet: 505.60    Stator 4 exit: 508.79
            Stator 5 inlet: 515.22    Stator 5 exit: 517.96            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.13
Fan Bypass Relative Humidity       2.36
LPC Inlet Relative Humidity        2.11
LPC Exit Relative Humidity         0.24
HPC Relative Humidity              0.05
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          675.10    Fan/LPC Inlet Flow Velocity        173.29
Ambient Static Pressure          3.58    Fan/LPC Inlet Static Pressure        4.74
Ambient Static Temperature     423.42    Fan/LPC Inlet Static Temperature   458.91
Additional Water at LPC Exit   0.0047504
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.669	34281.0	27.00	275.81	689.8	1.0611	731.95	8.9045	675.10	8.753	0.795	10.000	1697.4	1604.5	1121.6

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	275.81	4.831	461.41	-20.25	0.0000	791.34	3.578	423.42	2579.4	0.6690	1.40081	0.0000588	275.79	0.016	0.0001
FS1	Inlet.Fl_O	275.81	4.831	461.41	-20.25	0.0000	791.34	4.453	450.77	4168.2	0.3433	1.40081	0.0000588	275.79	0.016	0.0001
FS12	Splitter.Fl_02	247.96	4.829	461.41	-20.25	0.0000	711.80	4.397	449.20	3531.8	0.3682	1.40081	0.0000588	247.95	0.015	0.0001
FS2	Splitter.Fl_01	27.85	4.829	461.41	-20.25	0.0000	79.94	4.738	458.91	830.5	0.1650	1.40081	0.0000588	27.84	0.002	0.0001
FS14	Fan.Fl_O	247.96	5.368	477.12	-16.48	0.0000	651.08	4.576	455.82	2606.7	0.4828	1.40069	0.0000588	247.95	0.015	0.0001
FS23	LPC.Fl_O	27.85	7.146	526.80	-4.57	0.0000	57.71	6.855	520.58	412.6	0.2444	1.40011	0.0000588	27.84	0.002	0.0001
FS24	VaporIN.Fl_O	27.98	7.146	533.31	-30.28	0.0000	58.34	6.848	526.85	412.6	0.2478	1.39937	0.0048092	27.84	0.134	0.0048
FS25	Bleed2.Fl_O	25.18	7.146	533.31	-30.28	0.0000	52.51	6.907	528.14	412.6	0.2213	1.39937	0.0048092	25.06	0.121	0.0048
FS3	HPC.Fl_O	23.96	42.285	959.54	73.69	0.0000	11.33	37.245	926.38	49.7	0.4320	1.38242	0.0048092	23.85	0.115	0.0048
FS36	Bleed3.Fl_O	18.57	42.285	959.54	73.69	0.0000	8.78	39.391	940.89	49.3	0.3217	1.38242	0.0048092	18.48	0.089	0.0048
FS4	Burner.Fl_O	18.77	41.311	1697.41	61.50	0.0110	12.08	39.004	1673.22	74.6	0.2948	1.33177	0.0048092	18.48	0.089	0.0181
FS45	HPT.Fl_O	25.09	10.194	1125.74	-39.17	0.0082	53.29	9.285	1097.85	265.4	0.3719	1.36636	0.0048092	24.77	0.119	0.0147
FS49	LPT.Fl_O	25.38	3.943	908.34	-92.43	0.0081	125.21	3.768	897.04	860.2	0.2574	1.38009	0.0048092	25.06	0.121	0.0146
FS5	TEGV.Fl_O	25.38	3.943	908.42	-92.43	0.0081	125.21	3.768	897.11	860.2	0.2574	1.38008	0.0048092	25.06	0.121	0.0146
FS8	Core_Nozz.Fl_O	25.38	3.943	908.49	-92.43	0.0081	125.22	3.578	884.49	613.3	0.3774	1.38008	0.0048092	25.06	0.121	0.0146
FS17	FanDuctLkg.Fl_O	247.96	5.368	477.12	-16.48	0.0000	651.08	4.576	455.82	2606.7	0.4828	1.40069	0.0000588	247.95	0.015	0.0001
FS171	Bleed15.Fl_O	250.76	5.368	477.75	-16.64	0.0000	658.86	4.445	452.64	2481.9	0.5262	1.40068	0.0001115	250.73	0.028	0.0001
FS172	FanDuct.Fl_O	250.76	5.368	477.75	-16.64	0.0000	658.86	4.445	452.64	2481.9	0.5262	1.40068	0.0001115	250.73	0.028	0.0001
FS173	Byp_Nozz.Fl_O	250.76	5.368	477.75	-16.64	0.0000	658.86	3.578	425.39	2006.9	0.7836	1.40068	0.0001115	250.73	0.028	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	711.80	1.112	0.9037	2405.476	1.0340	0.9052	-1320.5	5030.32	54.10
LPC	79.94	1.480	0.8371	2405.476	1.1417	0.8459	-617.7	6.44	3.08
HPC	52.51	5.917	0.8157	8909.132	1.7992	0.8544	-3614.6	61.85	58.34
HPT	12.08	4.052	0.8741	219.273	1.3569	0.8520	3614.6		
LPT	53.29	2.586	0.8423	67.621	1.2371	0.8238	1938.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	827.04	1.109	0.9056	2382.540	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	66.86	1.449	0.7723	0.635	0.0000	1.1957	1.0683	1.0840	0.0003
HPC	47.76	5.685	0.8241	8671.620	10.9653	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.968	0.8741	1.318	3.9678	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.193	0.8486	0.761	2.1925	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2579.39	5787.2
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2574	860.21
FanDuct	0.0000	0.5262	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.9045	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9034.0	2101.4	3614.6
LP_Shaft	2268.8	4486.7	1938.2

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	0.9267	748.11	21.70	10.194
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.2946	748.11	21.70	3.943
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	726.75	16.50	14.877
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	858.60	48.74	28.932
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	726.75	16.50	14.877
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	959.54	73.69	42.285
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	726.75	16.50	14.877

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1000	1.0000	1.0000	2.7979	533.31	-30.28	7.146
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	2.8752	959.54	73.69	41.311
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.5158	959.54	73.69	23.512
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	959.54	73.69	42.285
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	959.54	73.69	42.285
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	959.54	73.69	42.285
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	477.12	-16.48	5.368
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	477.12	-16.48	5.368
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	477.12	-16.48	5.368
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	477.12	-16.48	5.368

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1697.35	0.9995	0.0230	0.20332	0.01100

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.102	0.9801	1.0000	0.9800	613.40	0.377	536.4	423.2
Byp_Nozz	1.500	0.9800	1.0000	0.9800	2006.86	0.784	776.7	6053.8

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Date:04/04/13 Time:08:34:42 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 15/ 29/ 1/13 Run by: Philip C Jorgenson PC: 10
Temperature Stator 1 inlet: 474.95 Stator 1 exit: 480.63 Stator 2 inlet: 487.65 Stator 2 exit: 491.07
Stator 3 inlet: 498.37 Stator 3 exit: 501.38 Stator 4 inlet: 508.23 Stator 4 exit: 510.71
Stator 5 inlet: 516.21 Stator 5 exit: 518.29 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	4.08		
Fan Bypass Relative Humidity	3.22		
LPC Inlet Relative Humidity	2.94		
LPC Exit Relative Humidity	0.50		
HPC Relative Humidity	0.06		
Drop Diameter	0.0000050	Inlet Length	40.00
Ambient Flow Velocity	624.43	Fan/LPC Inlet Flow Velocity	174.75
Ambient Static Pressure	4.36	Fan/LPC Inlet Static Pressure	5.49
Ambient Static Temperature	438.58	Fan/LPC Inlet Static Temperature	468.53
Additional Water at LPC Exit	0.0047726		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.608	30029.0	27.00	301.88	743.4	1.0696	795.15	8.4760	624.43	8.168	0.828	10.000	1698.4	1605.0	1125.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	301.88	5.595	471.08	-18.23	0.0000	755.65	4.358	438.58	2595.7	0.6080	1.40073	0.0001104	301.84	0.033	0.0001
FS1	Inlet.Fl_O	301.88	5.595	471.08	-18.23	0.0000	755.65	5.199	461.28	4168.2	0.3255	1.40073	0.0001104	301.84	0.033	0.0001
FS12	Splitter.Fl_02	270.02	5.592	471.08	-18.23	0.0000	676.24	5.146	460.00	3531.8	0.3467	1.40073	0.0001104	269.99	0.030	0.0001
FS2	Splitter.Fl_01	31.86	5.592	471.08	-18.23	0.0000	79.78	5.487	468.53	830.5	0.1646	1.40073	0.0001104	31.85	0.004	0.0001
FS14	Fan.Fl_O	270.02	6.144	485.31	-14.82	0.0000	624.79	5.324	465.82	2606.7	0.4569	1.40061	0.0001104	269.99	0.030	0.0001
FS23	LPC.Fl_O	31.86	7.848	527.32	-4.74	0.0000	60.15	7.499	520.51	412.6	0.2556	1.40010	0.0001104	31.85	0.004	0.0001
FS24	VaporIN.Fl_O	32.01	7.848	533.85	-30.58	0.0000	60.81	7.490	526.79	412.6	0.2591	1.39935	0.0048829	31.85	0.156	0.0049
FS25	Bleed2.Fl_O	27.21	7.848	533.85	-30.58	0.0000	51.69	7.593	528.84	412.6	0.2177	1.39935	0.0048829	27.08	0.132	0.0049
FS3	HPC.Fl_O	25.89	45.703	956.58	72.54	0.0000	11.30	40.280	923.66	49.7	0.4309	1.38259	0.0048829	25.76	0.126	0.0049
FS36	Bleed3.Fl_O	20.06	45.703	956.58	72.54	0.0000	8.76	42.588	938.05	49.3	0.3210	1.38259	0.0048829	19.97	0.097	0.0049
FS4	Burner.Fl_O	20.28	44.651	1698.45	60.30	0.0111	12.08	42.156	1674.25	74.6	0.2948	1.33167	0.0048829	19.97	0.097	0.0182
FS45	HPT.Fl_O	27.11	11.175	1129.30	-39.50	0.0083	52.61	10.207	1102.15	265.4	0.3663	1.36609	0.0048829	26.76	0.131	0.0149
FS49	LPT.Fl_O	27.43	4.716	930.87	-88.04	0.0082	114.51	4.542	921.32	860.2	0.2340	1.37871	0.0048829	27.08	0.132	0.0148
FS5	TEGV.Fl_O	27.43	4.716	930.94	-88.04	0.0082	114.51	4.542	921.39	860.2	0.2340	1.37870	0.0048829	27.08	0.132	0.0148
FS8	Core_Nozz.Fl_O	27.43	4.716	931.01	-88.04	0.0082	114.52	4.358	911.04	613.5	0.3399	1.37870	0.0048829	27.08	0.132	0.0148
FS17	FanDuctLkg.Fl_O	270.02	6.144	485.31	-14.82	0.0000	624.79	5.324	465.82	2606.7	0.4569	1.40061	0.0001104	269.99	0.030	0.0001
FS171	Bleed15.Fl_O	274.82	6.144	486.16	-15.09	0.0000	636.46	5.176	462.90	2481.9	0.5008	1.40059	0.0001934	274.77	0.053	0.0002
FS172	FanDuct.Fl_O	274.82	6.144	486.16	-15.09	0.0000	636.46	5.176	462.90	2481.9	0.5008	1.40059	0.0001934	274.77	0.053	0.0002
FS173	Byp_Nozz.Fl_O	274.82	6.144	486.16	-15.09	0.0000	636.46	4.358	440.68	2006.9	0.7176	1.40059	0.0001934	274.77	0.053	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	676.24	1.099	0.9025	2255.002	1.0302	0.9038	-1303.0	-9896.42	52.67
LPC	79.78	1.403	0.8521	2255.002	1.1194	0.8591	-607.8	5.95	2.64
HPC	51.69	5.824	0.8140	8882.190	1.7918	0.8528	-3873.2	62.24	58.63
HPT	12.08	3.996	0.8740	218.654	1.3526	0.8522	3873.2		
LPT	52.61	2.370	0.8339	63.950	1.2107	0.8164	1910.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	785.73	1.096	0.9043	2233.501	0.0417	0.8607	1.0235	0.9980	0.9905
LPC	60.51	1.384	0.7656	0.596	0.0000	1.3184	1.0509	1.1130	0.0003
HPC	47.01	5.596	0.8224	8645.397	10.9526	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.913	0.8740	1.314	3.9125	12.6299	0.9723	1.0000	0.0003
LPT	0.81	2.030	0.8401	0.719	2.0302	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2595.66	5858.8

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2340	860.21
FanDuct	0.0000	0.5008	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.4760	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9011.2	2257.4	3873.2
LP_Shaft	2149.1	4670.0	1910.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0012	746.86	20.98	11.175
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3183	746.86	20.98	4.716
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	725.68	15.83	16.176
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	856.44	47.79	31.318
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	725.68	15.83	16.176
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	956.58	72.54	45.703
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	725.68	15.83	16.176

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1500	1.0000	1.0000	4.8014	533.85	-30.58	7.848
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.1066	956.58	72.54	44.651
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.7183	956.58	72.54	25.503
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	956.58	72.54	45.703
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	956.58	72.54	45.703
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	956.58	72.54	45.703
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	485.31	-14.82	6.144
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	485.31	-14.82	6.144
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	485.31	-14.82	6.144
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	485.31	-14.82	6.144

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1698.39	0.9995	0.0230	0.22088	0.01106

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.082	0.9801	1.0000	0.9800	613.40	0.340	490.0	417.8
Byp_Nozz	1.410	0.9800	1.0000	0.9800	2006.86	0.718	724.0	6184.4

```
**********************************************************************************************************************************
Date:04/04/13    Time:08:35:12    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 21/ 49/ 2/18    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 482.85    Stator 1 exit: 487.03    Stator 2 inlet: 491.79    Stator 2 exit: 493.68
            Stator 3 inlet: 498.94    Stator 3 exit: 500.42    Stator 4 inlet: 505.46    Stator 4 exit: 506.53
            Stator 5 inlet: 510.22    Stator 5 exit: 511.00            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.93
Fan Bypass Relative Humidity       4.06
LPC Inlet Relative Humidity        3.92
LPC Exit Relative Humidity         1.25
HPC Relative Humidity              0.06
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          576.87    Fan/LPC Inlet Flow Velocity        193.91
Ambient Static Pressure          5.30    Fan/LPC Inlet Static Pressure        6.37
Ambient Static Temperature     454.14    Fan/LPC Inlet Static Temperature   478.74
Additional Water at LPC Exit   0.0044016
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.552	25666.0	27.00	326.71	754.1	1.1196	844.26	7.1404	576.87	7.287	0.858	10.000	1704.6	1609.0	1133.5

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	326.71	6.516	481.87	-16.15	0.0000	710.20	5.297	454.14	2590.8	0.5520	1.40063	0.0001988	326.64	0.065	0.0002
FS1	Inlet.Fl_O	326.71	6.516	481.87	-16.15	0.0000	710.20	6.113	473.14	4168.2	0.3035	1.40063	0.0001988	326.64	0.065	0.0002
FS12	Splitter.Fl_02	286.57	6.513	481.87	-16.15	0.0000	623.27	6.078	472.43	3531.8	0.3157	1.40063	0.0001988	286.51	0.057	0.0002
FS2	Splitter.Fl_01	40.13	6.513	481.87	-16.15	0.0000	87.29	6.366	478.74	830.5	0.1807	1.40063	0.0001988	40.13	0.008	0.0002
FS14	Fan.Fl_O	286.57	7.056	494.24	-13.19	0.0000	582.60	6.258	477.55	2606.7	0.4177	1.40050	0.0001988	286.51	0.057	0.0002
FS23	LPC.Fl_O	40.13	8.235	522.34	-6.45	0.0000	71.87	7.701	512.41	412.6	0.3111	1.40016	0.0001988	40.13	0.008	0.0002
FS24	VaporIN.Fl_O	40.31	8.235	528.40	-30.27	0.0000	72.61	7.687	518.12	412.6	0.3153	1.39947	0.0046004	40.13	0.185	0.0046
FS25	Bleed2.Fl_O	28.22	8.235	528.40	-30.27	0.0000	50.82	7.977	523.62	412.6	0.2138	1.39947	0.0046004	28.09	0.129	0.0046
FS3	HPC.Fl_O	26.85	47.484	944.78	71.20	0.0000	11.21	41.955	912.87	49.7	0.4264	1.38333	0.0046004	26.73	0.123	0.0046
FS36	Bleed3.Fl_O	20.81	47.484	944.78	71.20	0.0000	8.69	44.303	926.79	49.3	0.3180	1.38333	0.0046004	20.71	0.095	0.0046
FS4	Burner.Fl_O	21.04	46.390	1704.55	58.69	0.0113	12.08	43.797	1680.29	74.6	0.2949	1.33125	0.0046004	20.71	0.095	0.0183
FS45	HPT.Fl_O	28.12	11.977	1137.91	-39.39	0.0084	51.11	11.004	1112.35	265.4	0.3541	1.36544	0.0046004	27.76	0.128	0.0148
FS49	LPT.Fl_O	28.45	5.624	962.12	-82.25	0.0083	101.27	5.463	954.52	860.2	0.2055	1.37673	0.0046004	28.09	0.129	0.0147
FS5	TEGV.Fl_O	28.45	5.624	962.19	-82.25	0.0083	101.27	5.463	954.59	860.2	0.2055	1.37673	0.0046004	28.09	0.129	0.0147
FS8	Core_Nozz.Fl_O	28.45	5.624	962.26	-82.25	0.0083	101.27	5.297	946.62	613.4	0.2960	1.37672	0.0046004	28.09	0.129	0.0147
FS17	FanDuctLkg.Fl_O	286.57	7.056	494.24	-13.19	0.0000	582.60	6.258	477.55	2606.7	0.4177	1.40050	0.0001988	286.51	0.057	0.0002
FS171	Bleed15.Fl_O	298.66	7.056	495.63	-13.88	0.0000	608.04	6.063	474.59	2481.9	0.4705	1.40046	0.0003763	298.55	0.112	0.0004
FS172	FanDuct.Fl_O	298.66	7.056	495.63	-13.88	0.0000	608.04	6.063	474.59	2481.9	0.4705	1.40046	0.0003763	298.55	0.112	0.0004
FS173	Byp_Nozz.Fl_O	298.66	7.056	495.63	-13.88	0.0000	608.04	5.297	456.59	2006.9	0.6533	1.40046	0.0003763	298.55	0.112	0.0004

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	623.27	1.083	0.9031	2044.393	1.0257	0.9043	-1202.5	-2763.57	49.88
LPC	87.29	1.264	0.8262	2044.393	1.0840	0.8319	-551.1	6.38	2.41
HPC	50.82	5.766	0.8128	8854.850	1.7880	0.8517	-3953.0	61.50	57.83
HPT	12.08	3.873	0.8751	216.478	1.3437	0.8539	3952.9		
LPT	51.11	2.130	0.8239	58.416	1.1798	0.8080	1753.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	724.18	1.082	0.9050	2024.900	0.0425	0.8607	1.0235	0.9980	0.9905
LPC	53.46	1.311	0.7607	0.540	0.0000	1.6327	0.8502	1.0861	0.0003
HPC	46.22	5.541	0.8212	8618.786	11.0083	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.794	0.8750	1.301	3.7936	12.6299	0.9723	1.0000	0.0003
LPT	0.78	1.850	0.8300	0.657	1.8498	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2590.82	5857.7
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2055	860.21
FanDuct	0.0000	0.4705	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.1404	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8937.6	2322.9	3952.9
LP_Shaft	1970.5	4674.1	1753.7

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0384	738.16	20.46	11.977
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3301	738.16	20.46	5.624
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	717.29	15.39	16.870
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	846.11	46.85	32.569
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	717.29	15.39	16.870
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	944.78	71.20	47.484
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	717.29	15.39	16.870

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.3000	1.0000	1.0000	12.0932	528.40	-30.27	8.235
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.2219	944.78	71.20	46.390
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.8192	944.78	71.20	26.706
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	944.78	71.20	47.484
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	944.78	71.20	47.484
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	944.78	71.20	47.484
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	494.24	-13.19	7.056
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	494.24	-13.19	7.056
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	494.24	-13.19	7.056
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	494.24	-13.19	7.056

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1704.49	0.9995	0.0230	0.23452	0.01132

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.062	0.9801	1.0000	0.9800	613.40	0.296	434.5	384.3
Byp_Nozz	1.332	0.9800	1.0000	0.9800	2006.86	0.653	670.9	6227.5

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*****************************************************************************************************************************************
Date:04/04/13    Time:08:35:59    Model:                                   Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 50/ 78/ 2/47    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 495.90    Stator 1 exit: 498.91    Stator 2 inlet: 501.78    Stator 2 exit: 502.62
            Stator 3 inlet: 506.05    Stator 3 exit: 506.45    Stator 4 inlet: 509.77    Stator 4 exit: 509.86
            Stator 5 inlet: 511.80    Stator 5 exit: 511.68             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity        10.00
Fan Face Relative Humidity        5.94
Fan Bypass Relative Humidity      5.03
LPC Inlet Relative Humidity       5.11
LPC Exit Relative Humidity        2.66
HPC Relative Humidity             0.07
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity           523.25    Fan/LPC Inlet Flow Velocity        202.76
Ambient Static Pressure           6.74    Fan/LPC Inlet Static Pressure        7.75
Ambient Static Temperature      474.18    Fan/LPC Inlet Static Temperature   493.56
Additional Water at LPC Exit     0.0045473
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.490	20047.0	27.00	363.33	826.2	1.1307	934.23	6.3335	523.25	6.383	0.889	10.000	1733.9	1634.6	1162.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	363.33	7.943	496.98	-13.65	0.0000	658.00	6.740	474.18	2606.8	0.4900	1.40045	0.0003932	363.18	0.143	0.0004
FS1	Inlet.Fl_O	363.33	7.943	496.98	-13.65	0.0000	658.00	7.525	489.36	4168.2	0.2788	1.40045	0.0003932	363.18	0.143	0.0004
FS12	Splitter.Fl_02	313.78	7.939	496.98	-13.65	0.0000	568.56	7.504	489.03	3531.8	0.2849	1.40045	0.0003932	313.66	0.123	0.0004
FS2	Splitter.Fl_01	49.54	7.939	496.98	-13.65	0.0000	89.77	7.750	493.56	830.5	0.1861	1.40045	0.0003932	49.52	0.019	0.0004
FS14	Fan.Fl_O	313.78	8.506	507.91	-11.03	0.0000	536.50	7.708	493.81	2606.7	0.3777	1.40032	0.0003932	313.66	0.123	0.0004
FS23	LPC.Fl_O	49.54	9.112	525.37	-6.84	0.0000	80.42	8.356	512.52	412.6	0.3540	1.40009	0.0003932	49.52	0.019	0.0004
FS24	VaporIN.Fl_O	49.77	9.112	531.61	-31.45	0.0000	81.26	8.336	518.26	412.6	0.3591	1.39937	0.0049405	49.52	0.245	0.0049
FS25	Bleed2.Fl_O	29.86	9.112	531.61	-31.45	0.0000	48.76	8.850	527.20	412.6	0.2047	1.39937	0.0049405	29.71	0.147	0.0049
FS3	HPC.Fl_O	28.41	50.698	941.92	68.58	0.0000	11.10	44.934	910.89	49.7	0.4209	1.38344	0.0049405	28.27	0.140	0.0049
FS36	Bleed3.Fl_O	22.02	50.698	941.92	68.58	0.0000	8.60	47.376	924.38	49.3	0.3143	1.38344	0.0049405	21.91	0.108	0.0049
FS4	Burner.Fl_O	22.28	49.530	1733.93	55.53	0.0118	12.09	46.760	1709.31	74.6	0.2952	1.32947	0.0049405	21.91	0.108	0.0192
FS45	HPT.Fl_O	29.77	13.458	1167.13	-40.93	0.0088	48.77	12.472	1143.66	265.4	0.3357	1.36325	0.0049405	29.37	0.145	0.0156
FS49	LPT.Fl_O	30.12	7.042	1011.85	-78.73	0.0087	87.79	6.892	1005.95	860.2	0.1773	1.37333	0.0049405	29.71	0.147	0.0155
FS5	TEGV.Fl_O	30.12	7.042	1011.92	-78.73	0.0087	87.80	6.892	1006.02	860.2	0.1773	1.37333	0.0049405	29.71	0.147	0.0155
FS8	Core_Nozz.Fl_O	30.12	7.042	1011.99	-78.73	0.0087	87.80	6.740	999.99	613.5	0.2534	1.37332	0.0049405	29.71	0.147	0.0155
FS17	FanDuctLkg.Fl_O	313.78	8.506	507.91	-11.03	0.0000	536.50	7.708	493.81	2606.7	0.3777	1.40032	0.0003932	313.66	0.123	0.0004
FS171	Bleed15.Fl_O	333.69	8.506	509.33	-12.25	0.0000	571.33	7.474	490.84	2481.9	0.4338	1.40026	0.0006634	333.47	0.221	0.0007
FS172	FanDuct.Fl_O	333.69	8.506	509.33	-12.25	0.0000	571.33	7.474	490.84	2481.9	0.4338	1.40026	0.0006634	333.47	0.221	0.0007
FS173	Byp_Nozz.Fl_O	333.69	8.506	509.33	-12.25	0.0000	571.33	6.740	476.55	2006.9	0.5861	1.40026	0.0006634	333.47	0.221	0.0007

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	568.56	1.071	0.9051	1842.251	1.0220	0.9060	-1163.4	-1872.26	46.44
LPC	89.77	1.148	0.7035	1842.251	1.0571	0.7092	-477.4	7.00	2.16
HPC	48.76	5.564	0.8084	8787.280	1.7718	0.8475	-4123.4	61.55	57.62
HPT	12.09	3.680	0.8770	213.643	1.3284	0.8571	4123.4		
LPT	48.77	1.911	0.8165	52.785	1.1502	0.8025	1640.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	660.61	1.070	0.9069	1824.685	0.0438	0.8607	1.0235	0.9980	0.9905
LPC	46.84	1.245	0.7556	0.487	0.0000	1.9166	0.6021	0.9310	0.0003
HPC	44.34	5.349	0.8167	8553.017	11.0349	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.606	0.8770	1.284	3.6060	12.6299	0.9723	1.0000	0.0003
LPT	0.75	1.685	0.8226	0.594	1.6852	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2606.80	5908.9
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1773	860.21
FanDuct	0.0000	0.4338	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.3335	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8896.2	2434.4	4123.4
LP_Shaft	1803.3	4778.5	1640.7

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0989	738.29	18.57	13.458
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3494	738.29	18.57	7.042
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	717.72	13.56	18.261
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	844.67	44.57	34.895
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	717.72	13.56	18.261
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	941.92	68.58	50.698
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	717.72	13.56	18.261

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	19.9076	531.61	-31.45	9.112
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.4096	941.92	68.58	49.530
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.9835	941.92	68.58	28.897
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	941.92	68.58	50.698
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	941.92	68.58	50.698
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	941.92	68.58	50.698
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	507.91	-11.03	8.506
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	507.91	-11.03	8.506
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	507.91	-11.03	8.506
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	507.91	-11.03	8.506

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1733.87	0.9995	0.0230	0.25951	0.01184

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.045	0.9801	1.0000	0.9800	613.40	0.253	382.0	357.6
Byp_Nozz	1.262	0.9800	1.0000	0.9800	2006.86	0.586	614.9	6377.5

****

Date:04/04/13 Time:08:36:38 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 43/ 71/ 2/40 Run by: Philip C Jorgenson PC: 10
Temperature Stator 1 inlet: 509.88 Stator 1 exit: 512.25 Stator 2 inlet: 514.65 Stator 2 exit: 515.45
Stator 3 inlet: 518.24 Stator 3 exit: 518.72 Stator 4 inlet: 521.40 Stator 4 exit: 521.64
Stator 5 inlet: 523.34 Stator 5 exit: 523.42 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	6.60		
Fan Bypass Relative Humidity	6.07		
LPC Inlet Relative Humidity	5.78		
LPC Exit Relative Humidity	3.42		
HPC Relative Humidity	0.14		
Drop Diameter	0.0000050	Inlet Length	40.00
Ambient Flow Velocity	484.46	Fan/LPC Inlet Flow Velocity	170.01
Ambient Static Pressure	8.15	Fan/LPC Inlet Static Pressure	9.18
Ambient Static Temperature	490.63	Fan/LPC Inlet Static Temperature	507.76
Additional Water at LPC Exit	0.0069693		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.446	15435.0	27.00	380.80	629.6	1.3999	881.42	6.9588	484.46	5.188	0.900	10.000	1688.0	1590.7	1156.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	380.80	9.342	510.16	-11.98	0.0000	594.11	8.149	490.63	2525.7	0.4460	1.40025	0.0006510	380.55	0.248	0.0007
FS1	Inlet.Fl_O	380.80	9.342	510.16	-11.98	0.0000	594.11	8.946	503.89	4168.2	0.2495	1.40025	0.0006510	380.55	0.248	0.0007
FS12	Splitter.Fl_02	332.95	9.337	510.16	-11.98	0.0000	519.72	8.914	503.44	3531.8	0.2583	1.40025	0.0006510	332.74	0.217	0.0007
FS2	Splitter.Fl_01	47.85	9.337	510.16	-11.98	0.0000	74.69	9.184	507.76	830.5	0.1539	1.40025	0.0006510	47.82	0.031	0.0007
FS14	Fan.Fl_O	332.95	9.802	518.13	-10.07	0.0000	498.93	9.020	505.96	2606.7	0.3467	1.40015	0.0006510	332.74	0.217	0.0007
FS23	LPC.Fl_O	47.85	10.476	533.17	-6.45	0.0000	68.05	9.871	524.19	412.6	0.2927	1.39994	0.0006510	47.82	0.031	0.0007
FS24	VaporIN.Fl_O	48.18	10.476	542.57	-44.07	0.0000	69.13	9.847	533.09	412.6	0.2987	1.39884	0.0076203	47.82	0.364	0.0076
FS25	Bleed2.Fl_O	28.91	10.476	542.57	-44.07	0.0000	41.48	10.259	539.35	412.6	0.1730	1.39884	0.0076203	28.69	0.219	0.0076
FS3	HPC.Fl_O	27.51	48.463	913.20	46.40	0.0000	11.07	42.980	883.20	49.7	0.4197	1.38470	0.0076203	27.30	0.208	0.0076
FS36	Bleed3.Fl_O	21.32	48.463	913.20	46.40	0.0000	8.58	45.302	896.23	49.3	0.3135	1.38470	0.0076203	21.16	0.161	0.0076
FS4	Burner.Fl_O	21.56	47.347	1688.00	33.93	0.0116	12.07	44.700	1663.96	74.6	0.2949	1.33142	0.0076203	21.16	0.161	0.0215
FS45	HPT.Fl_O	28.81	14.130	1160.80	-53.16	0.0086	44.83	13.266	1141.41	265.4	0.3054	1.36341	0.0076203	28.35	0.216	0.0180
FS49	LPT.Fl_O	29.15	8.389	1035.70	-83.41	0.0085	72.17	8.269	1031.67	860.2	0.1451	1.37157	0.0076203	28.69	0.219	0.0179
FS5	TEGV.Fl_O	29.15	8.389	1035.77	-83.41	0.0085	72.17	8.269	1031.74	860.2	0.1451	1.37156	0.0076203	28.69	0.219	0.0179
FS8	Core_Nozz.Fl_O	29.15	8.389	1035.85	-83.41	0.0085	72.17	8.149	1027.74	613.4	0.2060	1.37156	0.0076203	28.69	0.219	0.0179
FS17	FanDuctLkg.Fl_O	332.95	9.802	518.13	-10.07	0.0000	498.93	9.020	505.96	2606.7	0.3467	1.40015	0.0006510	332.74	0.217	0.0007
FS171	Bleed15.Fl_O	352.23	9.802	519.47	-11.93	0.0000	528.49	8.809	503.85	2481.9	0.3937	1.40008	0.0010299	351.86	0.362	0.0010
FS172	FanDuct.Fl_O	352.23	9.802	519.47	-11.93	0.0000	528.49	8.809	503.85	2481.9	0.3937	1.40008	0.0010299	351.86	0.362	0.0010
FS173	Byp_Nozz.Fl_O	352.23	9.802	519.47	-11.93	0.0000	528.49	8.149	492.76	2006.9	0.5204	1.40008	0.0010299	351.86	0.362	0.0010

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	519.72	1.050	0.8960	1600.228	1.0156	0.8967	-899.9	-1532.72	44.75
LPC	74.69	1.122	0.7411	1600.228	1.0451	0.7453	-373.9	8.33	1.96
HPC	41.48	4.626	0.7926	8512.931	1.6831	0.8310	-3610.6	69.77	64.34
HPT	12.07	3.351	0.8685	211.922	1.2991	0.8491	3610.6		
LPT	44.83	1.684	0.8032	46.582	1.1172	0.7913	1273.6		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	603.87	1.049	0.8978	1584.970	0.0441	0.8607	1.0235	0.9980	0.9905
LPC	39.39	1.182	0.7477	0.423	0.0000	1.8959	0.6712	0.9912	0.0003
HPC	37.72	4.455	0.8008	8285.982	10.6913	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.286	0.8685	1.274	3.2856	12.6299	0.9723	1.0000	0.0003
LPT	0.69	1.515	0.8091	0.524	1.5147	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2525.74	5733.9
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1451	860.21
FanDuct	0.0000	0.3937	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.9588	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8706.9	2177.9	3610.6
LP_Shaft	1587.1	4214.9	1273.6

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0638	729.10	1.17	14.130
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3382	729.10	1.17	8.389
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	710.53	-3.36	18.833
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	825.22	24.69	34.028
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	710.53	-3.36	18.833
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	913.20	46.40	48.463
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	710.53	-3.36	18.833

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	19.2718	542.57	-44.07	10.476
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.3007	913.20	46.40	47.347
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.8882	913.20	46.40	28.347
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	913.20	46.40	48.463
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	913.20	46.40	48.463
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	913.20	46.40	48.463
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	518.13	-10.07	9.802
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	518.13	-10.07	9.802
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	518.13	-10.07	9.802
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	518.13	-10.07	9.802

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1687.94	0.9995	0.0230	0.24484	0.01157

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.029	0.9801	1.0000	0.9800	613.40	0.206	314.8	285.2
Byp_Nozz	1.203	0.9800	1.0000	0.9800	2006.86	0.520	555.2	6078.3

5μm, 4g/m^3, ISA +27R

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**********************************************************************************************************************************
Date:04/04/13    Time:08:19:37    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 39/ 2/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 473.84    Stator 1 exit: 481.57    Stator 2 inlet: 491.27    Stator 2 exit: 496.29
            Stator 3 inlet: 506.22    Stator 3 exit: 510.77    Stator 4 inlet: 519.97    Stator 4 exit: 523.76
            Stator 5 inlet: 531.28    Stator 5 exit: 534.66            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.87
Fan Bypass Relative Humidity       1.30
LPC Inlet Relative Humidity        1.21
LPC Exit Relative Humidity         0.11
HPC Relative Humidity              0.06
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity           781.11    Fan/LPC Inlet Flow Velocity        187.19
Ambient Static Pressure           2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature      416.97    Fan/LPC Inlet Static Temperature   464.91
Additional Water at LPC Exit    0.0091071
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	27.00	254.97	652.9	1.0891	711.14	8.7511	781.11	9.520	0.736	10.000	1757.5	1663.0	1158.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	254.97	4.267	467.83	-18.66	0.0000	834.05	2.854	416.97	2544.5	0.7800	1.40077	0.0000507	254.96	0.013	0.0001
FS1	Inlet.Fl_O	254.97	4.267	467.83	-18.66	0.0000	834.05	3.891	455.66	4168.2	0.3651	1.40077	0.0000507	254.96	0.013	0.0001
FS12	Splitter.Fl_02	228.82	4.265	467.83	-18.66	0.0000	748.89	3.837	453.89	3531.8	0.3914	1.40077	0.0000507	228.81	0.012	0.0001
FS2	Splitter.Fl_01	26.15	4.265	467.83	-18.66	0.0000	85.58	4.172	464.91	830.5	0.1770	1.40077	0.0000507	26.15	0.001	0.0001
FS14	Fan.Fl_O	228.82	4.830	486.54	-14.18	0.0000	674.37	4.052	462.71	2606.7	0.5070	1.40061	0.0000507	228.81	0.012	0.0001
FS23	LPC.Fl_O	26.15	6.690	545.05	-0.14	0.0000	58.88	6.406	538.33	412.6	0.2498	1.39984	0.0000507	26.15	0.001	0.0001
FS24	VaporIN.Fl_O	26.39	6.690	557.10	-49.28	0.0000	60.07	6.392	549.91	412.6	0.2561	1.39840	0.0091579	26.15	0.239	0.0091
FS25	Bleed2.Fl_O	23.75	6.690	557.10	-49.28	0.0000	54.06	6.451	551.35	412.6	0.2287	1.39840	0.0091579	23.53	0.216	0.0091
FS3	HPC.Fl_O	22.60	40.618	1007.03	61.22	0.0000	11.39	35.694	971.83	49.7	0.4365	1.37886	0.0091579	22.39	0.205	0.0091
FS36	Bleed3.Fl_O	17.51	40.618	1007.03	61.22	0.0000	8.83	37.794	987.27	49.3	0.3248	1.37886	0.0091579	17.35	0.159	0.0091
FS4	Burner.Fl_O	17.71	39.683	1757.48	48.80	0.0114	12.07	37.463	1732.61	74.6	0.2954	1.32807	0.0091579	17.35	0.159	0.0227
FS45	HPT.Fl_O	23.67	9.523	1162.54	-58.29	0.0085	54.68	8.619	1132.03	265.4	0.3846	1.36318	0.0091579	23.26	0.213	0.0193
FS49	LPT.Fl_O	23.95	3.264	910.78	-120.61	0.0084	142.85	3.072	895.67	860.2	0.2981	1.37916	0.0091579	23.53	0.216	0.0192
FS5	TEGV.Fl_O	23.95	3.264	910.85	-120.61	0.0084	142.86	3.072	895.74	860.2	0.2981	1.37916	0.0091579	23.53	0.216	0.0192
FS8	Core_Nozz.Fl_O	23.95	3.264	910.92	-120.61	0.0084	142.86	2.854	877.83	613.5	0.4452	1.37915	0.0091579	23.53	0.216	0.0192
FS17	FanDuctLkg.Fl_O	228.82	4.830	486.54	-14.18	0.0000	674.37	4.052	462.71	2606.7	0.5070	1.40061	0.0000507	228.81	0.012	0.0001
FS171	Bleed15.Fl_O	231.46	4.830	487.35	-14.58	0.0000	682.71	3.918	459.03	2481.9	0.5549	1.40058	0.0001536	231.43	0.036	0.0002
FS172	FanDuct.Fl_O	231.46	4.830	487.35	-14.58	0.0000	682.71	3.918	459.03	2481.9	0.5549	1.40058	0.0001536	231.43	0.036	0.0002
FS173	Byp_Nozz.Fl_O	231.46	4.830	487.35	-14.58	0.0000	682.71	2.854	419.24	2006.8	0.9002	1.40058	0.0001536	231.43	0.036	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	748.89	1.132	0.9062	2583.766	1.0400	0.9078	-1451.6	1508.91	54.61
LPC	85.58	1.569	0.8325	2583.766	1.1650	0.8428	-685.1	7.02	3.84
HPC	54.06	6.071	0.8181	8959.355	1.8076	0.8567	-3622.5	61.75	58.40
HPT	12.07	4.167	0.8772	221.489	1.3636	0.8553	3622.4		
LPT	54.68	2.917	0.8564	71.970	1.2747	0.8369	2136.6		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	870.14	1.129	0.9080	2559.130	0.0415	0.8607	1.0235	0.9980	0.9905
LPC	74.58	1.529	0.7806	0.682	0.0000	1.1475	1.0754	1.0664	0.0003
HPC	49.16	5.832	0.8266	8720.505	10.9525	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.079	0.8772	1.331	4.0795	12.6299	0.9723	1.0000	0.0003
LPT	0.84	2.442	0.8627	0.810	2.4419	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2544.46	6190.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2981	860.21
FanDuct	0.0000	0.5549	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7511	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9285.3	2049.0	3622.4
LP_Shaft	2453.9	4573.1	2136.6

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	0.8739	784.14	5.97	9.523
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.2778	784.14	5.97	3.264
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	761.59	0.45	14.155
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	900.69	34.70	27.726
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	761.59	0.45	14.155
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1007.03	61.22	40.618
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	761.59	0.45	14.155

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1000	1.0000	1.0000	2.6386	557.10	-49.28	6.690
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	2.7115	1007.03	61.22	39.683
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.3726	1007.03	61.22	22.431
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1007.03	61.22	40.618
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1007.03	61.22	40.618
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1007.03	61.22	40.618
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	486.54	-14.18	4.830
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	486.54	-14.18	4.830
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	486.54	-14.18	4.830
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	486.54	-14.18	4.830

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1757.42	0.9995	0.0230	0.19754	0.01138

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.144	0.9801	1.0000	0.9800	613.40	0.445	631.1	469.7
Byp_Nozz	1.692	0.9800	1.0000	0.9800	2006.86	0.900	885.9	6373.4

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Date:04/04/13 Time:08:20:03 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 13/ 41/ 2/10 Run by: Philip C Jorgenson PC: 10
Temperature Stator 1 inlet: 467.15 Stator 1 exit: 474.39 Stator 2 inlet: 483.46 Stator 2 exit: 488.14
Stator 3 inlet: 497.43 Stator 3 exit: 501.66 Stator 4 inlet: 510.30 Stator 4 exit: 513.86
Stator 5 inlet: 520.89 Stator 5 exit: 523.93 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	2.36		
Fan Bypass Relative Humidity	1.69		
LPC Inlet Relative Humidity	1.54		
LPC Exit Relative Humidity	0.15		
HPC Relative Humidity	0.06		
Drop Diameter	0.0000050	Inlet Length	40.00
Ambient Flow Velocity	731.04	Fan/LPC Inlet Flow Velocity	180.92
Ambient Static Pressure	2.95	Fan/LPC Inlet Static Pressure	4.11
Ambient Static Temperature	416.97	Fan/LPC Inlet Static Temperature	458.79
Additional Water at LPC Exit	0.0079013		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.730	38334.0	27.00	248.09	636.9	1.0625	676.68	8.8265	731.04	9.238	0.763	10.000	1727.2	1633.5	1139.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	248.09	4.201	461.52	-20.16	0.0000	818.60	2.947	416.97	2562.0	0.7300	1.40081	0.0000491	248.08	0.012	0.0000
FS1	Inlet.Fl_O	248.09	4.201	461.52	-20.16	0.0000	818.60	3.847	450.02	4168.2	0.3571	1.40081	0.0000491	248.08	0.012	0.0000
FS12	Splitter.Fl_02	222.84	4.199	461.52	-20.16	0.0000	735.66	3.795	448.34	3531.8	0.3830	1.40081	0.0000491	222.83	0.011	0.0000
FS2	Splitter.Fl_01	25.25	4.199	461.52	-20.16	0.0000	83.35	4.113	458.79	830.5	0.1723	1.40081	0.0000491	25.25	0.001	0.0000
FS14	Fan.Fl_O	222.84	4.722	478.92	-15.99	0.0000	666.45	3.984	456.19	2606.7	0.4987	1.40067	0.0000491	222.83	0.011	0.0000
FS23	LPC.Fl_O	25.25	6.446	533.65	-2.87	0.0000	58.38	6.177	527.19	412.6	0.2475	1.40002	0.0000491	25.25	0.001	0.0000
FS24	VaporIN.Fl_O	25.45	6.446	544.30	-45.53	0.0000	59.43	6.166	537.44	412.6	0.2530	1.39877	0.0079504	25.25	0.201	0.0079
FS25	Bleed2.Fl_O	22.90	6.446	544.30	-45.53	0.0000	53.48	6.221	538.81	412.6	0.2260	1.39877	0.0079504	22.72	0.181	0.0079
FS3	HPC.Fl_O	21.79	38.812	982.65	61.85	0.0000	11.36	34.145	948.49	49.7	0.4343	1.38055	0.0079504	21.62	0.172	0.0079
FS36	Bleed3.Fl_O	16.89	38.812	982.65	61.85	0.0000	8.80	36.134	963.45	49.3	0.3233	1.38055	0.0079504	16.76	0.133	0.0079
FS4	Burner.Fl_O	17.08	37.918	1727.24	49.59	0.0112	12.08	35.797	1702.69	74.6	0.2952	1.32976	0.0079504	16.76	0.133	0.0214
FS45	HPT.Fl_O	22.82	9.213	1143.60	-54.44	0.0084	54.05	8.363	1114.34	265.4	0.3789	1.36465	0.0079504	22.46	0.179	0.0180
FS49	LPT.Fl_O	23.09	3.314	906.61	-112.87	0.0083	135.38	3.140	893.24	860.2	0.2807	1.37965	0.0079504	22.72	0.181	0.0179
FS5	TEGV.Fl_O	23.09	3.314	906.68	-112.87	0.0083	135.38	3.140	893.31	860.2	0.2807	1.37965	0.0079504	22.72	0.181	0.0179
FS8	Core_Nozz.Fl_O	23.09	3.314	906.75	-112.87	0.0083	135.39	2.947	877.88	613.4	0.4157	1.37964	0.0079504	22.72	0.181	0.0179
FS17	FanDuctLkg.Fl_O	222.84	4.722	478.92	-15.99	0.0000	666.45	3.984	456.19	2606.7	0.4987	1.40067	0.0000491	222.83	0.011	0.0000
FS171	Bleed15.Fl_O	225.39	4.722	479.66	-16.33	0.0000	674.58	3.858	452.73	2481.9	0.5449	1.40066	0.0001376	225.36	0.031	0.0001
FS172	FanDuct.Fl_O	225.39	4.722	479.66	-16.33	0.0000	674.58	3.858	452.73	2481.9	0.5449	1.40066	0.0001376	225.36	0.031	0.0001
FS173	Byp_Nozz.Fl_O	225.39	4.722	479.66	-16.33	0.0000	674.58	2.947	419.12	2006.9	0.8489	1.40066	0.0001376	225.36	0.031	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	735.66	1.124	0.9053	2518.320	1.0377	0.9069	-1314.7	2024.64	54.51
LPC	83.35	1.535	0.8343	2518.320	1.1563	0.8440	-617.8	6.82	3.38
HPC	53.48	6.021	0.8174	8940.949	1.8054	0.8560	-3394.8	61.61	58.21
HPT	12.08	4.116	0.8758	220.384	1.3607	0.8538	3394.8		
LPT	54.05	2.780	0.8505	70.246	1.2594	0.8312	1932.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	854.77	1.122	0.9072	2494.309	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	71.75	1.500	0.7776	0.665	0.0000	1.1617	1.0709	1.0730	0.0003
HPC	48.64	5.784	0.8259	8702.589	10.9679	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.029	0.8758	1.324	4.0292	12.6299	0.9723	1.0000	0.0003
LPT	0.83	2.339	0.8568	0.790	2.3390	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2562.02	5637.0
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2807	860.21
FanDuct	0.0000	0.5449	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8265	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9159.2	1946.7	3394.8
LP_Shaft	2375.5	4272.5	1932.5

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8428	765.35	8.16	9.213
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2680	765.35	8.16	3.314
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	743.38	2.79	13.567
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	878.94	36.08	26.513
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	743.38	2.79	13.567
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	982.65	61.85	38.812
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	743.38	2.79	13.567

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5447	544.30	-45.53	6.446
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6150	982.65	61.85	37.918
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.2882	982.65	61.85	21.499
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	982.65	61.85	38.812
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	982.65	61.85	38.812
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	982.65	61.85	38.812
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	478.92	-15.99	4.722
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	478.92	-15.99	4.722
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	478.92	-15.99	4.722
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	478.92	-15.99	4.722

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1727.18	0.9995	0.0230	0.18797	0.01122

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.125	0.9801	1.0000	0.9800	613.40	0.416	589.1	422.8
Byp_Nozz	1.602	0.9800	1.0000	0.9800	2006.86	0.849	835.2	5851.1

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**********************************************************************************************************************************
Date:04/04/13    Time:08:20:27    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 40/ 2/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 465.08    Stator 1 exit: 472.13    Stator 2 inlet: 480.96    Stator 2 exit: 485.51
            Stator 3 inlet: 494.56    Stator 3 exit: 498.67    Stator 4 inlet: 507.09    Stator 4 exit: 510.56
            Stator 5 inlet: 517.42    Stator 5 exit: 520.37            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.52
Fan Bypass Relative Humidity       1.83
LPC Inlet Relative Humidity        1.66
LPC Exit Relative Humidity         0.16
HPC Relative Humidity              0.06
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity           715.01    Fan/LPC Inlet Flow Velocity        178.44
Ambient Static Pressure           3.09    Fan/LPC Inlet Static Pressure        4.25
Ambient Static Temperature      416.97    Fan/LPC Inlet Static Temperature   456.94
Additional Water at LPC Exit    0.0073898
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.714	37357.0	27.00	254.74	649.5	1.0589	687.73	8.8602	715.01	9.114	0.772	10.000	1715.3	1621.9	1132.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	254.74	4.339	459.59	-20.61	0.0000	812.10	3.088	416.97	2566.2	0.7140	1.40083	0.0000469	254.73	0.012	0.0000
FS1	Inlet.Fl_O	254.74	4.339	459.59	-20.61	0.0000	812.10	3.979	448.34	4168.2	0.3538	1.40083	0.0000469	254.73	0.012	0.0000
FS12	Splitter.Fl_02	228.90	4.337	459.59	-20.61	0.0000	730.10	3.926	446.69	3531.8	0.3796	1.40083	0.0000469	228.89	0.011	0.0000
FS2	Splitter.Fl_01	25.83	4.337	459.59	-20.61	0.0000	82.40	4.250	456.94	830.5	0.1702	1.40083	0.0000469	25.83	0.001	0.0000
FS14	Fan.Fl_O	228.90	4.863	476.49	-16.56	0.0000	663.04	4.112	454.18	2606.7	0.4951	1.40070	0.0000469	228.89	0.011	0.0000
FS23	LPC.Fl_O	25.83	6.599	529.84	-3.77	0.0000	58.15	6.326	523.48	412.6	0.2464	1.40007	0.0000469	25.83	0.001	0.0000
FS24	VaporIN.Fl_O	26.03	6.599	539.86	-43.68	0.0000	59.13	6.315	533.12	412.6	0.2516	1.39891	0.0074367	25.83	0.192	0.0074
FS25	Bleed2.Fl_O	23.42	6.599	539.86	-43.68	0.0000	53.22	6.371	534.47	412.6	0.2247	1.39891	0.0074367	23.25	0.173	0.0074
FS3	HPC.Fl_O	22.29	39.550	973.80	62.51	0.0000	11.35	34.806	939.99	49.7	0.4337	1.38116	0.0074367	22.12	0.165	0.0074
FS36	Bleed3.Fl_O	17.27	39.550	973.80	62.51	0.0000	8.79	36.827	954.80	49.3	0.3229	1.38116	0.0074367	17.15	0.128	0.0074
FS4	Burner.Fl_O	17.46	38.639	1715.31	50.31	0.0111	12.08	36.478	1690.93	74.6	0.2951	1.33044	0.0074367	17.15	0.128	0.0208
FS45	HPT.Fl_O	23.34	9.430	1136.17	-52.56	0.0083	53.84	8.568	1107.34	265.4	0.3769	1.36524	0.0074367	22.98	0.171	0.0174
FS49	LPT.Fl_O	23.61	3.454	904.72	-109.52	0.0082	132.71	3.280	891.94	860.2	0.2745	1.37987	0.0074367	23.25	0.173	0.0173
FS5	TEGV.Fl_O	23.61	3.454	904.79	-109.52	0.0082	132.71	3.280	892.01	860.2	0.2746	1.37987	0.0074367	23.25	0.173	0.0173
FS8	Core_Nozz.Fl_O	23.61	3.454	904.86	-109.52	0.0082	132.72	3.088	877.40	613.4	0.4054	1.37986	0.0074367	23.25	0.173	0.0173
FS17	FanDuctLkg.Fl_O	228.90	4.863	476.49	-16.56	0.0000	663.04	4.112	454.18	2606.7	0.4951	1.40070	0.0000469	228.89	0.011	0.0000
FS171	Bleed15.Fl_O	231.50	4.863	477.21	-16.87	0.0000	671.08	3.986	450.80	2481.9	0.5406	1.40068	0.0001294	231.47	0.030	0.0001
FS172	FanDuct.Fl_O	231.50	4.863	477.21	-16.87	0.0000	671.08	3.986	450.80	2481.9	0.5406	1.40068	0.0001294	231.47	0.030	0.0001
FS173	Byp_Nozz.Fl_O	231.50	4.863	477.21	-16.87	0.0000	671.08	3.088	419.07	2006.9	0.8319	1.40068	0.0001294	231.47	0.030	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	730.10	1.121	0.9050	2491.117	1.0368	0.9065	-1311.6	2362.72	54.45
LPC	82.40	1.522	0.8344	2491.117	1.1528	0.8439	-615.6	6.73	3.31
HPC	53.22	5.993	0.8170	8932.199	1.8038	0.8556	-3433.7	61.65	58.22
HPT	12.08	4.098	0.8752	220.030	1.3596	0.8532	3433.7		
LPT	53.84	2.730	0.8482	69.568	1.2538	0.8291	1927.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	848.31	1.118	0.9068	2467.365	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	70.57	1.488	0.7763	0.658	0.0000	1.1677	1.0698	1.0749	0.0003
HPC	48.40	5.758	0.8254	8694.072	10.9686	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.012	0.8752	1.322	4.0117	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.301	0.8545	0.783	2.3014	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2566.21	5661.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2745	860.21
FanDuct	0.0000	0.5406	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8602	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9112.8	1979.0	3433.7
LP_Shaft	2345.0	4316.5	1927.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8620	758.64	9.41	9.430
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2741	758.64	9.41	3.454
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	736.89	4.10	13.849
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	871.09	37.02	27.029
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	736.89	4.10	13.849
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	973.80	62.51	39.550
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	736.89	4.10	13.849

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6026	539.86	-43.68	6.599
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6745	973.80	62.51	38.639
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3402	973.80	62.51	21.932
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	973.80	62.51	39.550
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	973.80	62.51	39.550
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	973.80	62.51	39.550
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	476.49	-16.56	4.863
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	476.49	-16.56	4.863
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	476.49	-16.56	4.863
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	476.49	-16.56	4.863

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1715.26	0.9995	0.0230	0.19104	0.01114

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.118	0.9801	1.0000	0.9800	613.40	0.405	574.3	421.5
Byp_Nozz	1.575	0.9800	1.0000	0.9800	2006.86	0.832	818.4	5889.0

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**********************************************************************************************************************************
Date:04/04/13    Time:08:20:53    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 14/ 42/ 2/11    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 466.56    Stator 1 exit: 473.17    Stator 2 inlet: 481.42    Stator 2 exit: 485.66
            Stator 3 inlet: 494.12    Stator 3 exit: 497.93    Stator 4 inlet: 505.80    Stator 4 exit: 509.01
            Stator 5 inlet: 515.41    Stator 5 exit: 518.13            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.13
Fan Bypass Relative Humidity       2.35
LPC Inlet Relative Humidity        2.10
LPC Exit Relative Humidity         0.24
HPC Relative Humidity              0.07
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          675.10    Fan/LPC Inlet Flow Velocity        172.69
Ambient Static Pressure          3.58    Fan/LPC Inlet Static Pressure        4.74
Ambient Static Temperature     423.42    Fan/LPC Inlet Static Temperature   458.93
Additional Water at LPC Exit   0.0066923
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.669	34281.0	27.00	275.93	699.1	1.0513	735.03	8.9426	675.10	8.759	0.795	10.000	1704.2	1611.0	1126.5

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	275.93	4.831	461.41	-20.25	0.0000	791.69	3.578	423.42	2580.5	0.6690	1.40081	0.0000588	275.91	0.016	0.0001
FS1	Inlet.Fl_O	275.93	4.831	461.41	-20.25	0.0000	791.69	4.452	450.76	4168.2	0.3435	1.40081	0.0000588	275.91	0.016	0.0001
FS12	Splitter.Fl_02	248.18	4.829	461.41	-20.25	0.0000	712.42	4.396	449.18	3531.8	0.3686	1.40081	0.0000588	248.16	0.015	0.0001
FS2	Splitter.Fl_01	27.75	4.829	461.41	-20.25	0.0000	79.67	4.738	458.93	830.5	0.1644	1.40081	0.0000588	27.75	0.002	0.0001
FS14	Fan.Fl_O	248.18	5.372	477.22	-16.46	0.0000	651.27	4.579	455.90	2606.7	0.4830	1.40069	0.0000588	248.16	0.015	0.0001
FS23	LPC.Fl_O	27.75	7.156	527.14	-4.49	0.0000	57.45	6.868	520.97	412.6	0.2432	1.40011	0.0000588	27.75	0.002	0.0001
FS24	VaporIN.Fl_O	27.94	7.156	536.26	-40.65	0.0000	58.34	6.857	529.76	412.6	0.2479	1.39906	0.0067510	27.75	0.187	0.0067
FS25	Bleed2.Fl_O	25.14	7.156	536.26	-40.65	0.0000	52.50	6.916	531.06	412.6	0.2215	1.39906	0.0067510	24.98	0.169	0.0067
FS3	HPC.Fl_O	23.92	42.313	964.23	63.96	0.0000	11.33	37.259	930.86	49.7	0.4326	1.38184	0.0067510	23.76	0.160	0.0067
FS36	Bleed3.Fl_O	18.54	42.313	964.23	63.96	0.0000	8.78	39.411	945.46	49.3	0.3221	1.38184	0.0067510	18.42	0.124	0.0067
FS4	Burner.Fl_O	18.75	41.338	1704.23	51.80	0.0111	12.08	39.026	1679.96	74.6	0.2950	1.33111	0.0067510	18.42	0.124	0.0201
FS45	HPT.Fl_O	25.05	10.200	1130.72	-49.50	0.0083	53.30	9.289	1102.69	265.4	0.3723	1.36572	0.0067510	24.68	0.167	0.0167
FS49	LPT.Fl_O	25.35	3.944	912.34	-103.13	0.0082	125.28	3.768	900.97	860.2	0.2578	1.37954	0.0067510	24.98	0.169	0.0166
FS5	TEGV.Fl_O	25.35	3.944	912.41	-103.13	0.0082	125.28	3.768	901.04	860.2	0.2578	1.37954	0.0067510	24.98	0.169	0.0166
FS8	Core_Nozz.Fl_O	25.35	3.944	912.48	-103.13	0.0082	125.29	3.578	888.34	613.4	0.3780	1.37953	0.0067510	24.98	0.169	0.0166
FS17	FanDuctLkg.Fl_O	248.18	5.372	477.22	-16.46	0.0000	651.27	4.579	455.90	2606.7	0.4830	1.40069	0.0000588	248.16	0.015	0.0001
FS171	Bleed15.Fl_O	250.97	5.372	477.88	-16.73	0.0000	659.06	4.447	452.74	2481.9	0.5264	1.40067	0.0001328	250.94	0.033	0.0001
FS172	FanDuct.Fl_O	250.97	5.372	477.88	-16.73	0.0000	659.06	4.447	452.74	2481.9	0.5264	1.40067	0.0001328	250.94	0.033	0.0001
FS173	Byp_Nozz.Fl_O	250.97	5.372	477.88	-16.73	0.0000	659.06	3.578	425.42	2006.9	0.7843	1.40067	0.0001328	250.94	0.033	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	712.42	1.112	0.9040	2409.995	1.0343	0.9054	-1330.0	4741.63	54.05
LPC	79.67	1.482	0.8361	2409.995	1.1424	0.8449	-618.7	6.46	3.09
HPC	52.50	5.913	0.8156	8908.784	1.7981	0.8543	-3631.2	61.96	58.44
HPT	12.08	4.053	0.8745	219.430	1.3566	0.8525	3631.2		
LPT	53.30	2.586	0.8430	67.599	1.2371	0.8245	1948.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	827.76	1.110	0.9058	2387.016	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	67.06	1.451	0.7725	0.637	0.0000	1.1881	1.0682	1.0823	0.0003
HPC	47.75	5.681	0.8240	8671.282	10.9589	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.968	0.8745	1.319	3.9681	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.193	0.8493	0.760	2.1932	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2580.55	5789.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2578	860.21
FanDuct	0.0000	0.5264	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.9426	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9058.6	2105.4	3631.2
LP_Shaft	2273.1	4502.7	1948.8

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9253	751.97	11.65	10.200
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2942	751.97	11.65	3.944
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	730.52	6.42	14.891
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	862.89	38.85	28.953
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	730.52	6.42	14.891
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	964.23	63.96	42.313
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	730.52	6.42	14.891

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.7938	536.26	-40.65	7.156
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.8710	964.23	63.96	41.338
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.5122	964.23	63.96	23.527
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	964.23	63.96	42.313
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	964.23	63.96	42.313
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	964.23	63.96	42.313
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	477.22	-16.46	5.372
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	477.22	-16.46	5.372
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	477.22	-16.46	5.372
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	477.22	-16.46	5.372

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1704.16	0.9995	0.0230	0.20418	0.01109

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.102	0.9801	1.0000	0.9800	613.40	0.378	538.6	424.3
Byp_Nozz	1.501	0.9800	1.0000	0.9800	2006.86	0.784	777.5	6064.6

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Date:04/04/13 Time:08:21:22 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 20/ 48/ 2/17 Run by: Philip C Jorgenson PC: 10
Temperature Stator 1 inlet: 475.00 Stator 1 exit: 480.71 Stator 2 inlet: 487.75 Stator 2 exit: 491.19
Stator 3 inlet: 498.51 Stator 3 exit: 501.53 Stator 4 inlet: 508.37 Stator 4 exit: 510.85
Stator 5 inlet: 516.32 Stator 5 exit: 518.38 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	4.08		
Fan Bypass Relative Humidity	3.22		
LPC Inlet Relative Humidity	2.94		
LPC Exit Relative Humidity	0.50		
HPC Relative Humidity	0.07		
Drop Diameter	0.0000050	Inlet Length	40.00
Ambient Flow Velocity	624.43	Fan/LPC Inlet Flow Velocity	174.28
Ambient Static Pressure	4.36	Fan/LPC Inlet Static Pressure	5.49
Ambient Static Temperature	438.58	Fan/LPC Inlet Static Temperature	468.55
Additional Water at LPC Exit	0.0064079		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.608	30029.0	27.00	302.02	752.3	1.0607	797.99	8.5056	624.43	8.174	0.828	10.000	1704.0	1610.3	1129.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	302.02	5.595	471.08	-18.23	0.0000	755.99	4.358	438.58	2596.9	0.6080	1.40073	0.0001104	301.98	0.033	0.0001
FS1	Inlet.Fl_O	302.02	5.595	471.08	-18.23	0.0000	755.99	5.199	461.27	4168.2	0.3257	1.40073	0.0001104	301.98	0.033	0.0001
FS12	Splitter.Fl_02	270.24	5.592	471.08	-18.23	0.0000	676.80	5.145	459.98	3531.8	0.3470	1.40073	0.0001104	270.21	0.030	0.0001
FS2	Splitter.Fl_01	31.77	5.592	471.08	-18.23	0.0000	79.57	5.488	468.55	830.5	0.1642	1.40073	0.0001104	31.77	0.004	0.0001
FS14	Fan.Fl_O	270.24	6.147	485.39	-14.80	0.0000	625.01	5.326	465.88	2606.7	0.4571	1.40061	0.0001104	270.21	0.030	0.0001
FS23	LPC.Fl_O	31.77	7.859	527.53	-4.69	0.0000	59.92	7.512	520.78	412.6	0.2545	1.40010	0.0001104	31.77	0.004	0.0001
FS24	VaporIN.Fl_O	31.98	7.859	536.26	-39.32	0.0000	60.80	7.500	529.16	412.6	0.2592	1.39909	0.0065183	31.77	0.207	0.0065
FS25	Bleed2.Fl_O	27.18	7.859	536.26	-39.32	0.0000	51.68	7.603	531.23	412.6	0.2178	1.39909	0.0065183	27.00	0.176	0.0065
FS3	HPC.Fl_O	25.86	45.736	960.38	64.30	0.0000	11.31	40.299	927.30	49.7	0.4314	1.38211	0.0065183	25.69	0.167	0.0065
FS36	Bleed3.Fl_O	20.04	45.736	960.38	64.30	0.0000	8.76	42.613	941.77	49.3	0.3213	1.38211	0.0065183	19.91	0.130	0.0065
FS4	Burner.Fl_O	20.26	44.683	1703.95	52.09	0.0111	12.08	42.184	1679.69	74.6	0.2950	1.33112	0.0065183	19.91	0.130	0.0199
FS45	HPT.Fl_O	27.08	11.182	1133.33	-48.22	0.0083	52.61	10.212	1106.07	265.4	0.3666	1.36556	0.0065183	26.69	0.174	0.0165
FS49	LPT.Fl_O	27.40	4.717	934.15	-97.04	0.0082	114.57	4.543	924.55	860.2	0.2343	1.37825	0.0065183	27.00	0.176	0.0164
FS5	TEGV.Fl_O	27.40	4.717	934.22	-97.04	0.0082	114.57	4.543	924.62	860.2	0.2343	1.37825	0.0065183	27.00	0.176	0.0164
FS8	Core_Nozz.Fl_O	27.40	4.717	934.30	-97.04	0.0082	114.58	4.358	914.21	613.3	0.3405	1.37824	0.0065183	27.00	0.176	0.0164
FS17	FanDuctLkg.Fl_O	270.24	6.147	485.39	-14.80	0.0000	625.01	5.326	465.88	2606.7	0.4571	1.40061	0.0001104	270.21	0.030	0.0001
FS171	Bleed15.Fl_O	275.04	6.147	486.28	-15.22	0.0000	636.69	5.178	462.99	2481.9	0.5011	1.40058	0.0002214	274.98	0.061	0.0002
FS172	FanDuct.Fl_O	275.04	6.147	486.28	-15.22	0.0000	636.69	5.178	462.99	2481.9	0.5011	1.40058	0.0002214	274.98	0.061	0.0002
FS173	Byp_Nozz.Fl_O	275.04	6.147	486.28	-15.22	0.0000	636.69	4.358	440.72	2006.9	0.7182	1.40058	0.0002214	274.98	0.061	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	676.80	1.099	0.9027	2259.122	1.0304	0.9040	-1311.5	-----.--	52.64
LPC	79.57	1.405	0.8526	2259.122	1.1198	0.8595	-608.5	5.94	2.65
HPC	51.68	5.820	0.8139	8881.892	1.7909	0.8527	-3888.4	62.33	58.71
HPT	12.08	3.996	0.8743	218.786	1.3523	0.8526	3888.3		
LPT	52.61	2.371	0.8345	63.953	1.2107	0.8170	1920.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	786.38	1.097	0.9045	2237.582	0.0417	0.8607	1.0235	0.9980	0.9905
LPC	60.65	1.385	0.7657	0.597	0.0000	1.3120	1.0520	1.1134	0.0003
HPC	47.01	5.593	0.8224	8645.107	10.9472	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.913	0.8743	1.315	3.9128	12.6299	0.9723	1.0000	0.0003
LPT	0.81	2.031	0.8407	0.719	2.0309	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2596.85	5861.5
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2343	860.21
FanDuct	0.0000	0.5011	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.5056	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9031.3	2261.3	3888.3
LP_Shaft	2153.0	4683.7	1920.0

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0002	750.01	12.49	11.182
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3180	750.01	12.49	4.717
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	728.75	7.31	16.192
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	859.94	39.43	31.343
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	728.75	7.31	16.192
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	960.38	64.30	45.736
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	728.75	7.31	16.192

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1500	1.0000	1.0000	4.7964	536.26	-39.32	7.859
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.1034	960.38	64.30	44.683
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.7155	960.38	64.30	25.520
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	960.38	64.30	45.736
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	960.38	64.30	45.736
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	960.38	64.30	45.736
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	485.39	-14.80	6.147
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	485.39	-14.80	6.147
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	485.39	-14.80	6.147
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	485.39	-14.80	6.147

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1703.89	0.9995	0.0230	0.22166	0.01113

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.082	0.9801	1.0000	0.9800	613.40	0.340	491.9	418.9
Byp_Nozz	1.410	0.9800	1.0000	0.9800	2006.86	0.718	724.7	6194.9

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**************************************************************************************************************************************
Date:04/04/13    Time:08:21:55    Model:                                  Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 27/ 55/ 2/24    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 482.91    Stator 1 exit: 487.10    Stator 2 inlet: 491.89    Stator 2 exit: 493.80
            Stator 3 inlet: 499.08    Stator 3 exit: 500.58    Stator 4 inlet: 505.62    Stator 4 exit: 506.70
            Stator 5 inlet: 510.38    Stator 5 exit: 511.15             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity        10.00
Fan Face Relative Humidity        4.93
Fan Bypass Relative Humidity      4.05
LPC Inlet Relative Humidity       3.92
LPC Exit Relative Humidity        1.24
HPC Relative Humidity             0.08
Drop Diameter                 0.0000050    Inlet Length                      40.00
Ambient Flow Velocity            576.87    Fan/LPC Inlet Flow Velocity      193.48
Ambient Static Pressure            5.30    Fan/LPC Inlet Static Pressure      6.37
Ambient Static Temperature       454.14    Fan/LPC Inlet Static Temperature  478.75
Additional Water at LPC Exit     0.0060058
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.552	25666.0	27.00	326.86	763.7	1.1097	847.48	7.1619	576.87	7.295	0.858	10.000	1709.9	1614.2	1137.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	326.86	6.516	481.87	-16.15	0.0000	710.53	5.297	454.14	2592.0	0.5520	1.40063	0.0001988	326.79	0.065	0.0002
FS1	Inlet.Fl_O	326.86	6.516	481.87	-16.15	0.0000	710.53	6.112	473.13	4168.2	0.3036	1.40063	0.0001988	326.79	0.065	0.0002
FS12	Splitter.Fl_02	286.81	6.513	481.87	-16.15	0.0000	623.79	6.077	472.42	3531.8	0.3160	1.40063	0.0001988	286.75	0.057	0.0002
FS2	Splitter.Fl_01	40.05	6.513	481.87	-16.15	0.0000	87.10	6.367	478.75	830.5	0.1803	1.40063	0.0001988	40.04	0.008	0.0002
FS14	Fan.Fl_O	286.81	7.060	494.31	-13.17	0.0000	582.84	6.260	477.60	2606.7	0.4180	1.40050	0.0001988	286.75	0.057	0.0002
FS23	LPC.Fl_O	40.05	8.250	522.54	-6.40	0.0000	71.60	7.719	512.69	412.6	0.3098	1.40016	0.0001988	40.04	0.008	0.0002
FS24	VaporIN.Fl_O	40.29	8.250	530.79	-38.86	0.0000	72.60	7.701	520.45	412.6	0.3154	1.39921	0.0062046	40.04	0.248	0.0062
FS25	Bleed2.Fl_O	28.20	8.250	530.79	-38.86	0.0000	50.82	7.992	525.98	412.6	0.2139	1.39921	0.0062046	28.03	0.174	0.0062
FS3	HPC.Fl_O	26.83	47.534	948.51	63.11	0.0000	11.22	41.989	916.44	49.7	0.4269	1.38286	0.0062046	26.67	0.165	0.0062
FS36	Bleed3.Fl_O	20.80	47.534	948.51	63.11	0.0000	8.69	44.345	930.43	49.3	0.3184	1.38286	0.0062046	20.67	0.128	0.0062
FS4	Burner.Fl_O	21.03	46.440	1709.89	50.63	0.0114	12.08	43.841	1685.56	74.6	0.2951	1.33071	0.0062046	20.67	0.128	0.0199
FS45	HPT.Fl_O	28.11	11.988	1141.82	-47.94	0.0085	51.12	11.012	1116.16	265.4	0.3545	1.36493	0.0062046	27.70	0.172	0.0165
FS49	LPT.Fl_O	28.44	5.625	965.31	-91.07	0.0084	101.36	5.464	957.68	860.2	0.2059	1.37628	0.0062046	28.03	0.174	0.0163
FS5	TEGV.Fl_O	28.44	5.625	965.38	-91.07	0.0084	101.36	5.464	957.75	860.2	0.2059	1.37628	0.0062046	28.03	0.174	0.0163
FS8	Core_Nozz.Fl_O	28.44	5.625	965.46	-91.07	0.0084	101.37	5.297	949.73	613.4	0.2965	1.37627	0.0062046	28.03	0.174	0.0163
FS17	FanDuctLkg.Fl_O	286.81	7.060	494.31	-13.17	0.0000	582.84	6.260	477.60	2606.7	0.4180	1.40050	0.0001988	286.75	0.057	0.0002
FS171	Bleed15.Fl_O	298.90	7.060	495.80	-14.21	0.0000	608.31	6.065	474.72	2481.9	0.4708	1.40045	0.0004403	298.76	0.132	0.0004
FS172	FanDuct.Fl_O	298.90	7.060	495.80	-14.21	0.0000	608.31	6.065	474.72	2481.9	0.4708	1.40045	0.0004403	298.76	0.132	0.0004
FS173	Byp_Nozz.Fl_O	298.90	7.060	495.80	-14.21	0.0000	608.31	5.297	456.68	2006.9	0.6538	1.40045	0.0004403	298.76	0.132	0.0004

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	623.79	1.084	0.9034	2048.126	1.0258	0.9045	-1210.6	-2798.92	49.86
LPC	87.10	1.267	0.8287	2048.126	1.0844	0.8343	-552.7	6.37	2.41
HPC	50.82	5.762	0.8127	8854.502	1.7870	0.8516	-3969.9	61.61	57.92
HPT	12.08	3.874	0.8754	216.618	1.3435	0.8543	3969.8		
LPT	51.12	2.131	0.8245	58.422	1.1800	0.8086	1763.3		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	724.78	1.082	0.9053	2028.597	0.0426	0.8607	1.0235	0.9980	0.9905
LPC	53.59	1.312	0.7608	0.541	0.0000	1.6253	0.8541	1.0892	0.0003
HPC	46.22	5.537	0.8212	8618.447	11.0023	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.794	0.8753	1.302	3.7943	12.6299	0.9723	1.0000	0.0003
LPT	0.78	1.851	0.8306	0.657	1.8509	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2592.02	5860.4
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2059	860.21
FanDuct	0.0000	0.4708	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.1619	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8957.3	2327.7	3969.8
LP_Shaft	1974.1	4691.2	1763.3

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0378	741.24	12.13	11.988
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3300	741.24	12.13	5.625
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	720.31	7.03	16.893
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	849.54	38.64	32.606
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	720.31	7.03	16.893
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	948.51	63.11	47.534
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	720.31	7.03	16.893

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.3000	1.0000	1.0000	12.0861	530.79	-38.86	8.250
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.2200	948.51	63.11	46.440
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.8175	948.51	63.11	26.733
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	948.51	63.11	47.534
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	948.51	63.11	47.534
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	948.51	63.11	47.534
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	494.31	-13.17	7.060
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	494.31	-13.17	7.060
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	494.31	-13.17	7.060
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	494.31	-13.17	7.060

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1709.83	0.9995	0.0230	0.23541	0.01139

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.062	0.9801	1.0000	0.9800	613.40	0.296	436.1	385.5
Byp_Nozz	1.333	0.9800	1.0000	0.9800	2006.86	0.654	671.5	6238.7

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**********************************************************************************************************************************
Date:04/04/13    Time:08:22:46    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 56/ 84/ 2/53    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 495.95    Stator 1 exit: 498.98    Stator 2 inlet: 501.87    Stator 2 exit: 502.71
            Stator 3 inlet: 506.14    Stator 3 exit: 506.54    Stator 4 inlet: 509.85    Stator 4 exit: 509.93
            Stator 5 inlet: 511.88    Stator 5 exit: 511.80            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.94
Fan Bypass Relative Humidity       5.02
LPC Inlet Relative Humidity        5.10
LPC Exit Relative Humidity         2.65
HPC Relative Humidity              0.09
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          523.25    Fan/LPC Inlet Flow Velocity        202.42
Ambient Static Pressure          6.74    Fan/LPC Inlet Static Pressure        7.75
Ambient Static Temperature     474.18    Fan/LPC Inlet Static Temperature   493.57
Additional Water at LPC Exit   0.0059479
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.490	20047.0	27.00	363.50	836.0	1.1216	937.61	6.3486	523.25	6.390	0.889	10.000	1738.6	1639.1	1165.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	363.50	7.943	496.98	-13.65	0.0000	658.32	6.740	474.18	2608.1	0.4900	1.40045	0.0003932	363.36	0.143	0.0004
FS1	Inlet.Fl_O	363.50	7.943	496.98	-13.65	0.0000	658.32	7.525	489.36	4168.2	0.2790	1.40045	0.0003932	363.36	0.143	0.0004
FS12	Splitter.Fl_02	314.04	7.939	496.98	-13.65	0.0000	569.02	7.503	489.02	3531.8	0.2852	1.40045	0.0003932	313.92	0.123	0.0004
FS2	Splitter.Fl_01	49.47	7.939	496.98	-13.65	0.0000	89.63	7.750	493.57	830.5	0.1858	1.40045	0.0003932	49.45	0.019	0.0004
FS14	Fan.Fl_O	314.04	8.509	507.97	-11.02	0.0000	536.75	7.710	493.85	2606.7	0.3779	1.40032	0.0003932	313.92	0.123	0.0004
FS23	LPC.Fl_O	49.47	9.126	525.49	-6.81	0.0000	80.18	8.373	512.72	412.6	0.3528	1.40009	0.0003932	49.45	0.019	0.0004
FS24	VaporIN.Fl_O	49.76	9.126	533.61	-38.95	0.0000	81.27	8.347	520.20	412.6	0.3594	1.39915	0.0063412	49.45	0.314	0.0063
FS25	Bleed2.Fl_O	29.86	9.126	533.61	-38.95	0.0000	48.76	8.863	529.18	412.6	0.2048	1.39915	0.0063412	29.67	0.188	0.0063
FS3	HPC.Fl_O	28.41	50.761	945.12	61.50	0.0000	11.10	44.981	913.95	49.7	0.4214	1.38304	0.0063412	28.23	0.179	0.0063
FS36	Bleed3.Fl_O	22.02	50.761	945.12	61.50	0.0000	8.60	47.430	927.51	49.3	0.3146	1.38304	0.0063412	21.88	0.139	0.0063
FS4	Burner.Fl_O	22.28	49.592	1738.58	48.48	0.0119	12.09	46.816	1713.91	74.6	0.2954	1.32901	0.0063412	21.88	0.139	0.0206
FS45	HPT.Fl_O	29.77	13.470	1170.54	-48.41	0.0089	48.79	12.481	1146.97	265.4	0.3361	1.36281	0.0063412	29.32	0.186	0.0170
FS49	LPT.Fl_O	30.12	7.043	1014.66	-86.42	0.0088	87.89	6.893	1008.73	860.2	0.1776	1.37293	0.0063412	29.67	0.188	0.0169
FS5	TEGV.Fl_O	30.12	7.043	1014.73	-86.42	0.0088	87.89	6.893	1008.80	860.2	0.1776	1.37292	0.0063412	29.67	0.188	0.0169
FS8	Core_Nozz.Fl_O	30.12	7.043	1014.80	-86.42	0.0088	87.89	6.740	1002.73	613.4	0.2539	1.37292	0.0063412	29.67	0.188	0.0169
FS17	FanDuctLkg.Fl_O	314.04	8.509	507.97	-11.02	0.0000	536.75	7.710	493.85	2606.7	0.3779	1.40032	0.0003932	313.92	0.123	0.0004
FS171	Bleed15.Fl_O	333.94	8.509	509.51	-12.68	0.0000	571.63	7.475	490.99	2481.9	0.4341	1.40025	0.0007458	333.69	0.249	0.0007
FS172	FanDuct.Fl_O	333.94	8.509	509.51	-12.68	0.0000	571.63	7.475	490.99	2481.9	0.4341	1.40025	0.0007458	333.69	0.249	0.0007
FS173	Byp_Nozz.Fl_O	333.94	8.509	509.51	-12.68	0.0000	571.63	6.740	476.66	2006.9	0.5866	1.40025	0.0007458	333.69	0.249	0.0007

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	569.02	1.072	0.9053	1845.827	1.0221	0.9062	-1171.0	-1877.59	46.43
LPC	89.63	1.149	0.7084	1845.827	1.0574	0.7142	-478.5	6.98	2.18
HPC	48.76	5.562	0.8084	8787.568	1.7712	0.8475	-4140.5	61.62	57.69
HPT	12.09	3.682	0.8773	213.766	1.3282	0.8574	4140.5		
LPT	48.79	1.912	0.8170	52.811	1.1503	0.8031	1649.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	661.15	1.070	0.9071	1828.227	0.0438	0.8607	1.0235	0.9980	0.9905
LPC	46.95	1.246	0.7557	0.488	0.0000	1.9091	0.6068	0.9375	0.0003
HPC	44.35	5.347	0.8167	8553.298	11.0305	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.607	0.8773	1.285	3.6072	12.6299	0.9723	1.0000	0.0003
LPT	0.75	1.686	0.8231	0.594	1.6863	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2608.07	5911.7
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1776	860.21
FanDuct	0.0000	0.4341	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.3486	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8913.3	2439.8	4140.5
LP_Shaft	1806.8	4794.8	1649.5

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0987	740.91	11.27	13.470
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3493	740.91	11.27	7.043
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	720.29	6.25	18.286
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	847.60	37.39	34.940
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	720.29	6.25	18.286
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	945.12	61.50	50.761
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	720.29	6.25	18.286

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.4000	1.0000	1.0000	19.9039	533.61	-38.95	9.126
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.4089	945.12	61.50	49.592
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.9829	945.12	61.50	28.930
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	945.12	61.50	50.761
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	945.12	61.50	50.761
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	945.12	61.50	50.761
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	507.97	-11.02	8.509
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	507.97	-11.02	8.509
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	507.97	-11.02	8.509
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	507.97	-11.02	8.509

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1738.53	0.9995	0.0230	0.26045	0.01190

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.045	0.9801	1.0000	0.9800	613.40	0.254	383.3	358.8
Byp_Nozz	1.262	0.9800	1.0000	0.9800	2006.86	0.587	615.5	6388.9

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**********************************************************************************************************************************
Date:04/04/13    Time:08:23:20    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 39/ 67/ 2/36    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 509.87    Stator 1 exit: 512.21    Stator 2 inlet: 514.69    Stator 2 exit: 515.51
            Stator 3 inlet: 518.33    Stator 3 exit: 518.84    Stator 4 inlet: 521.54    Stator 4 exit: 521.80
            Stator 5 inlet: 523.52    Stator 5 exit: 523.62            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         6.61
Fan Bypass Relative Humidity       6.06
LPC Inlet Relative Humidity        5.77
LPC Exit Relative Humidity         3.40
HPC Relative Humidity              0.18
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          484.46    Fan/LPC Inlet Flow Velocity        169.47
Ambient Static Pressure          8.15    Fan/LPC Inlet Static Pressure        9.19
Ambient Static Temperature     490.63    Fan/LPC Inlet Static Temperature   507.77
Additional Water at LPC Exit   0.0097470

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.446   15435.0    27.00    381.14      646.0    1.3738     887.55    6.9906    484.46     5.200     0.900         10.000    1696.9   1599.2   1162.4


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht       FAR        Wc        Ps        Ts      Aphy      MN      gamt       WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O          381.14     9.342    510.16    -11.98    0.0000    594.65     8.149    490.63    2528.0  0.4460   1.40025  0.0006510   380.90    0.248    0.0007
FS1   Inlet.Fl_O            381.14     9.342    510.16    -11.98    0.0000    594.65     8.945    503.87    4168.2  0.2497   1.40025  0.0006510   380.90    0.248    0.0007
FS12  Splitter.Fl_02        333.45     9.337    510.16    -11.98    0.0000    520.49     8.913    503.42    3531.8  0.2587   1.40025  0.0006510   333.23    0.217    0.0007
FS2   Splitter.Fl_01         47.70     9.337    510.16    -11.98    0.0000     74.46     9.185    507.77     830.5  0.1534   1.40025  0.0006510    47.67    0.031    0.0007
FS14  Fan.Fl_O              333.45     9.808    518.21    -10.05    0.0000    499.41     9.023    506.01    2606.7  0.3471   1.40015  0.0006510   333.23    0.217    0.0007
FS23  LPC.Fl_O               47.70    10.496    533.38     -6.40    0.0000     67.73     9.896    524.49     412.6  0.2912   1.39994  0.0006510    47.67    0.031    0.0007
FS24  VaporIN.Fl_O           48.16    10.496    546.45    -58.87    0.0000     69.22     9.863    536.86     412.6  0.2995   1.39841  0.0103980    47.67    0.496    0.0103
FS25  Bleed2.Fl_O            28.90    10.496    546.45    -58.87    0.0000     41.53    10.278    543.19     412.6  0.1735   1.39841  0.0103980    28.60    0.297    0.0103
FS3   HPC.Fl_O              27.50    48.582    919.37     32.42    0.0000     11.07    43.068    889.10      49.7  0.4205   1.38392  0.0103980    27.21    0.283    0.0103
FS36  Bleed3.Fl_O            21.31    48.582    919.37     32.42    0.0000      8.58    45.404    902.26      49.3  0.3140   1.38392  0.0103980    21.09    0.219    0.0103
FS4   Burner.Fl_O            21.56    47.463   1696.85     20.01    0.0117     12.07    44.806   1672.69      74.6  0.2952   1.33051  0.0103980    21.09    0.219    0.0243
FS45  HPT.Fl_O               28.81    14.150   1167.22    -67.91    0.0087     44.88    13.281   1147.67     265.4  0.3062   1.36255  0.0103980    28.27    0.294    0.0208
FS49  LPT.Fl_O               29.14     8.390   1041.21    -98.48    0.0086     72.33     8.270   1037.13     860.2  0.1455   1.37077  0.0103980    28.60    0.297    0.0207
FS5   TEGV.Fl_O              29.14     8.390   1041.28    -98.48    0.0086     72.33     8.270   1037.20     860.2  0.1455   1.37077  0.0103980    28.60    0.297    0.0207
FS8   Core_Nozz.Fl_O         29.14     8.390   1041.35    -98.48    0.0086     72.33     8.149   1033.16     613.4  0.2067   1.37076  0.0103980    28.60    0.297    0.0207
FS17  FanDuctLkg.Fl_O       333.45     9.808    518.21    -10.05    0.0000    499.41     9.023    506.01    2606.7  0.3471   1.40015  0.0006510   333.23    0.217    0.0007
FS171 Bleed15.Fl_O           352.71     9.808    519.77    -12.71    0.0000    529.06     8.811    504.09    2481.9  0.3942   1.40006  0.0011786   352.30    0.415    0.0012
FS172 FanDuct.Fl_O           352.71     9.808    519.77    -12.71    0.0000    529.06     8.811    504.09    2481.9  0.3942   1.40006  0.0011786   352.30    0.415    0.0012
FS173 Byp_Nozz.Fl_O          352.71     9.808    519.77    -12.71    0.0000    529.06     8.149    492.96    2006.9  0.5212   1.40006  0.0011786   352.30    0.415    0.0012

TURBOMACHINERY PERFORMANCE DATA
                Wc      PR       eff        Nc        TR    efPoly        pwr       SMN       SMW
Fan         520.49   1.050    0.8972  1605.437    1.0158    0.8979     -911.0  -1529.28     44.74
LPC          74.46   1.124    0.7470  1605.437    1.0455    0.7512     -376.0      8.29      1.96
HPC          41.53   4.629    0.7926  8515.007    1.6824    0.8310    -3641.8     69.87     64.45
HPT          12.07   3.354    0.8692   212.174    1.2991    0.8499     3641.8
LPT          44.88   1.686    0.8042    46.604    1.1175    0.7923     1287.0

TURBOMACHINERY MAP DATA
             WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan         604.76   1.049   0.8990  1590.130    0.0442      0.8607    1.0235    0.9980    0.9905
LPC          39.55   1.183   0.7479     0.424    0.0000      1.8825    0.6780    0.9989    0.0003
HPC          37.77   4.458   0.8008  8288.003   10.6846      1.0995    1.0494    0.9898    0.9733
HPT           0.96   3.289   0.8692     1.275    3.2891     12.6299    0.9723    1.0000    0.0003
LPT           0.69   1.516   0.8102     0.524    1.5163     65.2590    0.7521    0.9926    0.0005
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===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2528.02	5739.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1455	860.21
FanDuct	0.0000	0.3942	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.9906	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8740.1	2188.4	3641.8
LP_Shaft	1592.2	4245.4	1287.0

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0634	734.17	-13.23	14.150
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3381	734.17	-13.23	8.390
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	715.48	-17.79	18.875
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	830.87	10.51	34.109
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	715.48	-17.79	18.875
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	919.37	32.42	48.582
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	715.48	-17.79	18.875

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	19.2654	546.45	-58.87	10.496
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.2996	919.37	32.42	47.463
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.8872	919.37	32.42	28.408
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	919.37	32.42	48.582
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	919.37	32.42	48.582
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	919.37	32.42	48.582
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	518.21	-10.05	9.808
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	518.21	-10.05	9.808
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	518.21	-10.05	9.808
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	518.21	-10.05	9.808

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1696.79	0.9995	0.0230	0.24654	0.01169

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.030	0.9801	1.0000	0.9800	613.40	0.207	316.9	287.1
Byp_Nozz	1.204	0.9800	1.0000	0.9800	2006.86	0.521	556.3	6098.1

5μm, 2g/m^3, ISA +36R

```
**********************************************************************************************************************************
Date:05/10/13    Time:11:40:17    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 40/ 2/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 484.08    Stator 1 exit: 492.01    Stator 2 inlet: 501.96    Stator 2 exit: 507.10
            Stator 3 inlet: 517.28    Stator 3 exit: 521.94    Stator 4 inlet: 531.38    Stator 4 exit: 535.30
            Stator 5 inlet: 543.07    Stator 5 exit: 546.53            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.98
Fan Bypass Relative Humidity       1.39
LPC Inlet Relative Humidity        1.30
LPC Exit Relative Humidity         0.12
HPC Relative Humidity              0.05
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        189.51
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   474.93
Additional Water at LPC Exit   0.0095376
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	252.43	657.7	1.0947	719.97	8.7419	789.49	9.531	0.736	10.000	1791.0	1695.1	1181.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	252.43	4.267	477.92	-16.44	0.0000	834.59	2.854	425.97	2546.2	0.7800	1.40068	0.0000851	252.41	0.021	0.0001
FS1	Inlet.Fl_O	252.43	4.267	477.92	-16.44	0.0000	834.59	3.891	465.47	4168.2	0.3654	1.40068	0.0000851	252.41	0.021	0.0001
FS12	Splitter.Fl_02	226.52	4.265	477.92	-16.44	0.0000	749.30	3.836	463.67	3531.8	0.3917	1.40068	0.0000851	226.50	0.019	0.0001
FS2	Splitter.Fl_01	25.91	4.265	477.92	-16.44	0.0000	85.71	4.172	474.93	830.5	0.1773	1.40068	0.0000851	25.91	0.002	0.0001
FS14	Fan.Fl_O	226.52	4.832	497.11	-11.84	0.0000	674.40	4.054	472.76	2606.7	0.5071	1.40049	0.0000851	226.50	0.019	0.0001
FS23	LPC.Fl_O	25.91	6.699	557.07	2.55	0.0000	58.91	6.415	550.20	412.6	0.2499	1.39964	0.0000851	25.91	0.002	0.0001
FS24	VaporIN.Fl_O	26.16	6.699	569.47	-48.91	0.0000	60.13	6.400	562.11	412.6	0.2565	1.39811	0.0096227	25.91	0.249	0.0095
FS25	Bleed2.Fl_O	23.54	6.699	569.47	-48.91	0.0000	54.11	6.459	563.58	412.6	0.2290	1.39811	0.0096227	23.32	0.224	0.0095
FS3	HPC.Fl_O	22.40	40.666	1028.50	64.03	0.0000	11.40	35.725	992.56	49.7	0.4372	1.37745	0.0096227	22.19	0.214	0.0095
FS36	Bleed3.Fl_O	17.36	40.666	1028.50	64.03	0.0000	8.83	37.833	1008.33	49.3	0.3252	1.37745	0.0096227	17.20	0.165	0.0095
FS4	Burner.Fl_O	17.56	39.729	1791.04	51.33	0.0116	12.07	37.506	1765.80	74.6	0.2956	1.32633	0.0096227	17.20	0.165	0.0235
FS45	HPT.Fl_O	23.47	9.537	1185.91	-58.12	0.0087	54.68	8.632	1154.87	265.4	0.3849	1.36150	0.0096227	23.05	0.222	0.0200
FS49	LPT.Fl_O	23.74	3.266	928.81	-121.97	0.0086	142.98	3.073	913.40	860.2	0.2986	1.37791	0.0096227	23.32	0.224	0.0199
FS5	TEGV.Fl_O	23.74	3.266	928.88	-121.97	0.0086	142.99	3.073	913.47	860.2	0.2986	1.37790	0.0096227	23.32	0.224	0.0199
FS8	Core_Nozz.Fl_O	23.74	3.266	928.95	-121.97	0.0086	142.99	2.854	895.18	613.4	0.4461	1.37790	0.0096227	23.32	0.224	0.0199
FS17	FanDuctLkg.Fl_O	226.52	4.832	497.11	-11.84	0.0000	674.40	4.054	472.76	2606.7	0.5071	1.40049	0.0000851	226.50	0.019	0.0001
FS171	Bleed15.Fl_O	229.13	4.832	497.95	-12.26	0.0000	682.76	3.920	469.01	2481.9	0.5550	1.40046	0.0001929	229.09	0.044	0.0002
FS172	FanDuct.Fl_O	229.13	4.832	497.95	-12.26	0.0000	682.76	3.920	469.01	2481.9	0.5550	1.40046	0.0001929	229.09	0.044	0.0002
FS173	Byp_Nozz.Fl_O	229.13	4.832	497.95	-12.26	0.0000	682.76	2.854	428.30	2006.9	0.9008	1.40046	0.0001929	229.09	0.044	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	749.30	1.133	0.9063	2587.056	1.0402	0.9080	-1474.6	1489.03	54.55
LPC	85.71	1.571	0.8321	2587.056	1.1656	0.8425	-696.0	7.03	3.87
HPC	54.11	6.070	0.8181	8961.021	1.8061	0.8566	-3670.8	61.93	58.58
HPT	12.07	4.166	0.8788	221.867	1.3628	0.8572	3670.8		
LPT	54.68	2.920	0.8588	72.113	1.2751	0.8396	2170.6		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	870.61	1.130	0.9081	2562.389	0.0415	0.8607	1.0235	0.9980	0.9905
LPC	74.72	1.530	0.7808	0.683	0.0000	1.1471	1.0764	1.0658	0.0003
HPC	49.22	5.831	0.8265	8722.126	10.9409	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.078	0.8788	1.333	4.0783	12.6299	0.9723	1.0000	0.0003
LPT	0.84	2.444	0.8652	0.811	2.4443	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2546.18	6194.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2986	860.21
FanDuct	0.0000	0.5550	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7419	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9389.6	2053.3	3670.8
LP_Shaft	2483.4	4590.8	2170.6

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8664	801.23	7.56	9.537
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2755	801.23	7.56	3.266
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	778.22	1.91	14.172
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	920.10	36.92	27.758
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	778.22	1.91	14.172
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	1028.50	64.03	40.666
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	778.22	1.91	14.172

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6159	569.47	-48.91	6.699
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6881	1028.50	64.03	39.729
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3522	1028.50	64.03	22.459
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1028.50	64.03	40.666
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1028.50	64.03	40.666
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1028.50	64.03	40.666
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	497.11	-11.84	4.832
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	497.11	-11.84	4.832
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	497.11	-11.84	4.832
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	497.11	-11.84	4.832

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1790.99	0.9995	0.0230	0.19999	0.01163

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.144	0.9801	1.0000	0.9800	613.40	0.446	638.4	471.1
Byp_Nozz	1.693	0.9800	1.0000	0.9800	2006.86	0.901	896.0	6380.7

```
**********************************************************************************************************************************
Date:05/10/13    Time:11:40:42    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 39/ 2/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 477.21    Stator 1 exit: 484.61    Stator 2 inlet: 493.88    Stator 2 exit: 498.66
            Stator 3 inlet: 508.16    Stator 3 exit: 512.48    Stator 4 inlet: 521.31    Stator 4 exit: 524.94
            Stator 5 inlet: 532.15    Stator 5 exit: 535.32            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.47
Fan Bypass Relative Humidity       1.78
LPC Inlet Relative Humidity        1.63
LPC Exit Relative Humidity         0.17
HPC Relative Humidity              0.05
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          738.88    Fan/LPC Inlet Flow Velocity        183.43
Ambient Static Pressure          2.95    Fan/LPC Inlet Static Pressure        4.11
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   468.67
Additional Water at LPC Exit   0.0074386
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.730	38334.0	36.00	245.58	637.7	1.0723	683.80	8.8021	738.88	9.246	0.764	10.000	1757.5	1662.4	1160.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	245.58	4.201	471.48	-17.97	0.0000	819.02	2.947	425.97	2563.4	0.7300	1.40073	0.0000824	245.56	0.020	0.0001
FS1	Inlet.Fl_O	245.58	4.201	471.48	-17.97	0.0000	819.02	3.846	459.71	4168.2	0.3574	1.40073	0.0000824	245.56	0.020	0.0001
FS12	Splitter.Fl_02	220.53	4.199	471.48	-17.97	0.0000	735.83	3.794	458.00	3531.8	0.3832	1.40073	0.0000824	220.51	0.018	0.0001
FS2	Splitter.Fl_01	25.05	4.199	471.48	-17.97	0.0000	83.60	4.113	468.67	830.5	0.1728	1.40073	0.0000824	25.05	0.002	0.0001
FS14	Fan.Fl_O	220.53	4.723	489.28	-13.70	0.0000	666.47	3.985	466.06	2606.7	0.4987	1.40057	0.0000824	220.51	0.018	0.0001
FS23	LPC.Fl_O	25.05	6.449	545.22	-0.28	0.0000	58.54	6.178	538.59	412.6	0.2482	1.39983	0.0000824	25.05	0.002	0.0001
FS24	VaporIN.Fl_O	25.24	6.449	555.10	-40.48	0.0000	59.50	6.168	548.08	412.6	0.2534	1.39865	0.0075210	25.05	0.188	0.0075
FS25	Bleed2.Fl_O	22.72	6.449	555.10	-40.48	0.0000	53.55	6.223	549.49	412.6	0.2263	1.39865	0.0075210	22.55	0.170	0.0075
FS3	HPC.Fl_O	21.61	38.845	1001.70	69.01	0.0000	11.36	34.168	966.90	49.7	0.4348	1.37944	0.0075210	21.45	0.161	0.0075
FS36	Bleed3.Fl_O	16.75	38.845	1001.70	69.01	0.0000	8.81	36.162	982.15	49.3	0.3236	1.37944	0.0075210	16.63	0.125	0.0075
FS4	Burner.Fl_O	16.94	37.950	1757.46	56.45	0.0114	12.08	35.828	1732.59	74.6	0.2953	1.32829	0.0075210	16.63	0.125	0.0212
FS45	HPT.Fl_O	22.64	9.224	1164.53	-49.60	0.0085	54.05	8.373	1134.82	265.4	0.3790	1.36326	0.0075210	22.28	0.168	0.0178
FS49	LPT.Fl_O	22.91	3.315	922.92	-109.30	0.0084	135.48	3.140	909.31	860.2	0.2810	1.37865	0.0075210	22.55	0.170	0.0176
FS5	TEGV.Fl_O	22.91	3.315	922.99	-109.30	0.0084	135.48	3.140	909.38	860.2	0.2810	1.37864	0.0075210	22.55	0.170	0.0176
FS8	Core_Nozz.Fl_O	22.91	3.315	923.06	-109.30	0.0084	135.49	2.947	893.68	613.4	0.4161	1.37864	0.0075210	22.55	0.170	0.0176
FS17	FanDuctLkg.Fl_O	220.53	4.723	489.28	-13.70	0.0000	666.47	3.985	466.06	2606.7	0.4987	1.40057	0.0000824	220.51	0.018	0.0001
FS171	Bleed15.Fl_O	223.05	4.723	490.03	-14.00	0.0000	674.61	3.859	462.51	2481.9	0.5450	1.40055	0.0001660	223.02	0.037	0.0002
FS172	FanDuct.Fl_O	223.05	4.723	490.03	-14.00	0.0000	674.61	3.859	462.51	2481.9	0.5450	1.40055	0.0001660	223.02	0.037	0.0002
FS173	Byp_Nozz.Fl_O	223.05	4.723	490.03	-14.00	0.0000	674.61	2.947	428.16	2006.9	0.8491	1.40055	0.0001660	223.02	0.037	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	735.83	1.125	0.9054	2519.750	1.0378	0.9070	-1331.8	2009.04	54.49
LPC	83.60	1.536	0.8342	2519.750	1.1564	0.8440	-627.0	6.83	3.39
HPC	53.55	6.023	0.8174	8943.039	1.8045	0.8560	-3433.6	61.71	58.31
HPT	12.08	4.114	0.8773	220.690	1.3601	0.8556	3433.6		
LPT	54.05	2.783	0.8526	70.399	1.2598	0.8336	1958.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	854.97	1.122	0.9073	2495.725	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	71.81	1.500	0.7776	0.666	0.0000	1.1642	1.0708	1.0728	0.0003
HPC	48.71	5.787	0.8259	8704.623	10.9607	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.028	0.8773	1.326	4.0280	12.6299	0.9723	1.0000	0.0003
LPT	0.83	2.341	0.8589	0.792	2.3410	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2563.40	5639.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2810	860.21
FanDuct	0.0000	0.5450	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8021	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9251.8	1949.2	3433.6
LP_Shaft	2402.4	4282.2	1958.7

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8360	780.43	14.27	9.224
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2658	780.43	14.27	3.315
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	758.04	8.79	13.576
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	896.12	42.73	26.535
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	758.04	8.79	13.576
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	1001.70	69.01	38.845
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	758.04	8.79	13.576

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5240	555.10	-40.48	6.449
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.5938	1001.70	69.01	37.950
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.2696	1001.70	69.01	21.519
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1001.70	69.01	38.845
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1001.70	69.01	38.845
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1001.70	69.01	38.845
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	489.28	-13.70	4.723
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	489.28	-13.70	4.723
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	489.28	-13.70	4.723
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	489.28	-13.70	4.723

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1757.40	0.9995	0.0230	0.18994	0.01142

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.125	0.9801	1.0000	0.9800	613.40	0.416	594.7	423.4
Byp_Nozz	1.603	0.9800	1.0000	0.9800	2006.86	0.849	844.4	5854.1

```
**********************************************************************************************************************************
Date:05/10/13    Time:11:41:06    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 39/ 2/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 475.09    Stator 1 exit: 482.29    Stator 2 inlet: 491.30    Stator 2 exit: 495.94
            Stator 3 inlet: 505.19    Stator 3 exit: 509.38    Stator 4 inlet: 517.98    Stator 4 exit: 521.51
            Stator 5 inlet: 528.52    Stator 5 exit: 531.56           Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.64
Fan Bypass Relative Humidity       1.93
LPC Inlet Relative Humidity        1.76
LPC Exit Relative Humidity         0.19
HPC Relative Humidity              0.05
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          722.68    Fan/LPC Inlet Flow Velocity        180.89
Ambient Static Pressure          3.09    Fan/LPC Inlet Static Pressure        4.25
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   466.78
Additional Water at LPC Exit   0.0066979
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.714	37357.0	36.00	252.12	648.4	1.0703	694.02	8.8351	722.68	9.116	0.772	10.000	1744.1	1649.4	1151.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	252.12	4.339	469.50	-18.42	0.0000	812.38	3.088	425.97	2567.1	0.7140	1.40075	0.0000786	252.10	0.020	0.0001
FS1	Inlet.Fl_O	252.12	4.339	469.50	-18.42	0.0000	812.38	3.979	458.00	4168.2	0.3539	1.40075	0.0000786	252.10	0.020	0.0001
FS12	Splitter.Fl_02	226.48	4.337	469.50	-18.42	0.0000	730.14	3.926	456.33	3531.8	0.3796	1.40075	0.0000786	226.46	0.018	0.0001
FS2	Splitter.Fl_01	25.63	4.337	469.50	-18.42	0.0000	82.64	4.250	466.78	830.5	0.1707	1.40075	0.0000786	25.63	0.002	0.0001
FS14	Fan.Fl_O	226.48	4.863	486.78	-14.28	0.0000	663.03	4.113	463.99	2606.7	0.4951	1.40060	0.0000786	226.46	0.018	0.0001
FS23	LPC.Fl_O	25.63	6.600	541.20	-1.23	0.0000	58.31	6.325	534.67	412.6	0.2471	1.39990	0.0000786	25.63	0.002	0.0001
FS24	VaporIN.Fl_O	25.81	6.600	550.16	-37.44	0.0000	59.18	6.315	543.29	412.6	0.2518	1.39883	0.0067765	25.63	0.174	0.0067
FS25	Bleed2.Fl_O	23.23	6.600	550.16	-37.44	0.0000	53.26	6.372	544.67	412.6	0.2249	1.39883	0.0067765	23.07	0.156	0.0067
FS3	HPC.Fl_O	22.10	39.555	991.90	70.72	0.0000	11.35	34.805	957.49	49.7	0.4341	1.38017	0.0067765	21.95	0.149	0.0067
FS36	Bleed3.Fl_O	17.13	39.555	991.90	70.72	0.0000	8.80	36.829	972.56	49.3	0.3231	1.38017	0.0067765	17.01	0.115	0.0067
FS4	Burner.Fl_O	17.32	38.644	1744.08	58.23	0.0113	12.08	36.484	1719.37	74.6	0.2952	1.32908	0.0067765	17.01	0.115	0.0204
FS45	HPT.Fl_O	23.15	9.436	1156.11	-46.52	0.0085	53.82	8.574	1126.88	265.4	0.3769	1.36395	0.0067765	22.80	0.154	0.0170
FS49	LPT.Fl_O	23.42	3.454	920.40	-104.64	0.0084	132.74	3.280	907.41	860.2	0.2746	1.37894	0.0067765	23.07	0.156	0.0168
FS5	TEGV.Fl_O	23.42	3.454	920.47	-104.64	0.0084	132.74	3.280	907.48	860.2	0.2746	1.37894	0.0067765	23.07	0.156	0.0168
FS8	Core_Nozz.Fl_O	23.42	3.454	920.54	-104.64	0.0084	132.75	3.088	892.64	613.4	0.4056	1.37893	0.0067765	23.07	0.156	0.0168
FS17	FanDuctLkg.Fl_O	226.48	4.863	486.78	-14.28	0.0000	663.03	4.113	463.99	2606.7	0.4951	1.40060	0.0000786	226.46	0.018	0.0001
FS171	Bleed15.Fl_O	229.06	4.863	487.49	-14.54	0.0000	671.08	3.986	460.52	2481.9	0.5407	1.40058	0.0001536	229.03	0.035	0.0002
FS172	FanDuct.Fl_O	229.06	4.863	487.49	-14.54	0.0000	671.08	3.986	460.52	2481.9	0.5407	1.40058	0.0001536	229.03	0.035	0.0002
FS173	Byp_Nozz.Fl_O	229.06	4.863	487.49	-14.54	0.0000	671.08	3.088	428.11	2006.9	0.8319	1.40058	0.0001536	229.03	0.035	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	730.14	1.121	0.9050	2491.498	1.0368	0.9065	-1326.5	2356.98	54.45
LPC	82.64	1.522	0.8352	2491.498	1.1527	0.8447	-623.6	6.73	3.31
HPC	53.26	5.993	0.8169	8933.540	1.8029	0.8556	-3467.9	61.76	58.33
HPT	12.08	4.095	0.8766	220.312	1.3590	0.8548	3467.9		
LPT	53.82	2.732	0.8501	69.716	1.2541	0.8313	1950.1		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	848.35	1.119	0.9068	2467.742	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	70.59	1.488	0.7763	0.658	0.0000	1.1708	1.0698	1.0758	0.0003
HPC	48.44	5.758	0.8254	8695.377	10.9612	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.010	0.8766	1.324	4.0097	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.303	0.8565	0.784	2.3027	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2567.14	5662.9
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2746	860.21
FanDuct	0.0000	0.5407	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8351	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9200.7	1979.6	3467.9
LP_Shaft	2370.5	4320.8	1950.1

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8547	772.97	16.64	9.436
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2717	772.97	16.64	3.454
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	750.83	11.23	13.850
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	887.42	44.76	27.032
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	750.83	11.23	13.850
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	991.90	70.72	39.555
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	750.83	11.23	13.850

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5806	550.16	-37.44	6.600
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6519	991.90	70.72	38.644
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3204	991.90	70.72	21.937
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	991.90	70.72	39.555
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	991.90	70.72	39.555
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	991.90	70.72	39.555
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	486.78	-14.28	4.863
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	486.78	-14.28	4.863
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	486.78	-14.28	4.863
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	486.78	-14.28	4.863

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1744.03	0.9995	0.0230	0.19278	0.01133

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.118	0.9801	1.0000	0.9800	613.40	0.406	579.2	421.6
Byp_Nozz	1.575	0.9800	1.0000	0.9800	2006.86	0.832	827.3	5889.8

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*******************************************************************************************************************************
Date:05/10/13    Time:11:41:22    Model:                                 Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 26/ 1/10    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 476.45    Stator 1 exit: 483.18    Stator 2 inlet: 491.59    Stator 2 exit: 495.91
            Stator 3 inlet: 504.53    Stator 3 exit: 508.41    Stator 4 inlet: 516.43    Stator 4 exit: 519.68
            Stator 5 inlet: 526.21    Stator 5 exit: 528.99             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.25
Fan Bypass Relative Humidity       2.46
LPC Inlet Relative Humidity        2.21
LPC Exit Relative Humidity         0.27
HPC Relative Humidity              0.05
Drop Diameter                 0.0000050    Inlet Length                          40.00
Ambient Flow Velocity            682.24    Fan/LPC Inlet Flow Velocity          174.69
Ambient Static Pressure            3.58    Fan/LPC Inlet Static Pressure          4.74
Ambient Static Temperature       432.42    Fan/LPC Inlet Static Temperature     468.67
Additional Water at LPC Exit     0.0060647
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.669	34281.0	36.00	272.97	694.5	1.0652	739.78	8.9302	682.24	8.742	0.795	10.000	1731.5	1637.1	1145.5

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	272.97	4.831	471.21	-18.12	0.0000	791.49	3.578	432.42	2580.0	0.6690	1.40074	0.0000968	272.95	0.026	0.0001
FS1	Inlet.Fl_O	272.97	4.831	471.21	-18.12	0.0000	791.49	4.452	460.34	4168.2	0.3434	1.40074	0.0000968	272.95	0.026	0.0001
FS12	Splitter.Fl_02	245.48	4.829	471.21	-18.12	0.0000	712.14	4.396	458.73	3531.8	0.3684	1.40074	0.0000968	245.46	0.024	0.0001
FS2	Splitter.Fl_01	27.49	4.829	471.21	-18.12	0.0000	79.75	4.738	468.67	830.5	0.1646	1.40074	0.0000968	27.49	0.003	0.0001
FS14	Fan.Fl_O	245.48	5.370	487.31	-14.26	0.0000	651.17	4.578	465.55	2606.7	0.4830	1.40059	0.0000968	245.46	0.024	0.0001
FS23	LPC.Fl_O	27.49	7.151	538.14	-2.07	0.0000	57.54	6.862	531.82	412.6	0.2437	1.39994	0.0000968	27.49	0.003	0.0001
FS24	VaporIN.Fl_O	27.66	7.151	546.29	-34.87	0.0000	58.33	6.852	539.68	412.6	0.2478	1.39898	0.0061615	27.49	0.169	0.0061
FS25	Bleed2.Fl_O	24.89	7.151	546.29	-34.87	0.0000	52.49	6.911	541.00	412.6	0.2214	1.39898	0.0061615	24.74	0.152	0.0061
FS3	HPC.Fl_O	23.68	42.231	981.50	71.57	0.0000	11.34	37.181	947.55	49.7	0.4330	1.38090	0.0061615	23.54	0.145	0.0061
FS36	Bleed3.Fl_O	18.35	42.231	981.50	71.57	0.0000	8.79	39.332	962.41	49.3	0.3224	1.38090	0.0061615	18.24	0.112	0.0061
FS4	Burner.Fl_O	18.56	41.259	1731.49	59.13	0.0113	12.08	38.953	1706.91	74.6	0.2951	1.32979	0.0061615	18.24	0.112	0.0197
FS45	HPT.Fl_O	24.80	10.189	1149.77	-43.92	0.0084	53.27	9.280	1121.38	265.4	0.3721	1.36448	0.0061615	24.45	0.151	0.0163
FS49	LPT.Fl_O	25.10	3.942	927.84	-98.52	0.0083	125.12	3.767	916.33	860.2	0.2575	1.37862	0.0061615	24.74	0.152	0.0162
FS5	TEGV.Fl_O	25.10	3.942	927.91	-98.52	0.0083	125.12	3.767	916.40	860.2	0.2575	1.37861	0.0061615	24.74	0.152	0.0162
FS8	Core_Nozz.Fl_O	25.10	3.942	927.98	-98.52	0.0083	125.13	3.578	903.56	613.4	0.3774	1.37861	0.0061615	24.74	0.152	0.0162
FS17	FanDuctLkg.Fl_O	245.48	5.370	487.31	-14.26	0.0000	651.17	4.578	465.55	2606.7	0.4830	1.40059	0.0000968	245.46	0.024	0.0001
FS171	Bleed15.Fl_O	248.25	5.370	487.97	-14.49	0.0000	658.95	4.446	462.31	2481.9	0.5263	1.40057	0.0001640	248.21	0.041	0.0002
FS172	FanDuct.Fl_O	248.25	5.370	487.97	-14.49	0.0000	658.95	4.446	462.31	2481.9	0.5263	1.40057	0.0001640	248.21	0.041	0.0002
FS173	Byp_Nozz.Fl_O	248.25	5.370	487.97	-14.49	0.0000	658.95	3.578	434.45	2006.9	0.7840	1.40057	0.0001640	248.21	0.041	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	712.14	1.112	0.9039	2408.079	1.0342	0.9053	-1340.1	4859.75	54.07
LPC	79.75	1.481	0.8367	2408.079	1.1420	0.8455	-624.2	6.45	3.08
HPC	52.49	5.905	0.8155	8908.345	1.7967	0.8542	-3657.4	62.13	58.61
HPT	12.08	4.049	0.8758	219.712	1.3559	0.8540	3657.4		
LPT	53.27	2.584	0.8447	67.690	1.2370	0.8264	1964.3		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	827.44	1.110	0.9057	2385.118	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	66.97	1.450	0.7724	0.636	0.0000	1.1907	1.0679	1.0833	0.0003
HPC	47.74	5.674	0.8239	8670.855	10.9485	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.965	0.8758	1.320	3.9648	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.192	0.8510	0.761	2.1917	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2579.98	5788.3
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2575	860.21
FanDuct	0.0000	0.5263	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.9302	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9142.5	2101.1	3657.4
LP_Shaft	2295.3	4494.7	1964.3

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	0.9160	765.75	18.35	10.189
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.2912	765.75	18.35	3.942
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	743.93	13.03	14.869
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	878.52	46.02	28.901
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	743.93	13.03	14.869
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	981.50	71.57	42.231
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	743.93	13.03	14.869

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1000	1.0000	1.0000	2.7656	546.29	-34.87	7.151
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	2.8420	981.50	71.57	41.259
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.4868	981.50	71.57	23.487
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	981.50	71.57	42.231
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	981.50	71.57	42.231
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	981.50	71.57	42.231
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	487.31	-14.26	5.370
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	487.31	-14.26	5.370
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	487.31	-14.26	5.370
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	487.31	-14.26	5.370

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1731.44	0.9995	0.0230	0.20549	0.01126

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.102	0.9801	1.0000	0.9800	613.40	0.377	542.1	422.9
Byp_Nozz	1.501	0.9800	1.0000	0.9800	2006.86	0.784	785.4	6059.9

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**********************************************************************************************************************************
Date:05/10/13    Time:11:41:38    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 13/ 27/ 1/11    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 484.73    Stator 1 exit: 490.51    Stator 2 inlet: 497.66    Stator 2 exit: 501.14
            Stator 3 inlet: 508.56    Stator 3 exit: 511.63    Stator 4 inlet: 518.56    Stator 4 exit: 521.05
            Stator 5 inlet: 526.62    Stator 5 exit: 528.77            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.19
Fan Bypass Relative Humidity       3.34
LPC Inlet Relative Humidity        3.05
LPC Exit Relative Humidity         0.55
HPC Relative Humidity              0.06
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          630.80    Fan/LPC Inlet Flow Velocity        175.45
Ambient Static Pressure          4.36    Fan/LPC Inlet Static Pressure        5.49
Ambient Static Temperature     447.58    Fan/LPC Inlet Static Temperature   478.17
Additional Water at LPC Exit   0.0061227
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.608	30029.0	36.00	298.46	738.9	1.0811	798.85	8.5220	630.80	8.123	0.827	10.000	1729.0	1634.3	1146.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	298.46	5.595	480.74	-16.28	0.0000	754.73	4.358	447.58	2592.6	0.6080	1.40064	0.0001750	298.41	0.052	0.0002
FS1	Inlet.Fl_O	298.46	5.595	480.74	-16.28	0.0000	754.73	5.200	470.77	4168.2	0.3251	1.40064	0.0001750	298.41	0.052	0.0002
FS12	Splitter.Fl_02	267.12	5.592	480.74	-16.28	0.0000	675.80	5.146	469.45	3531.8	0.3465	1.40064	0.0001750	267.07	0.047	0.0002
FS2	Splitter.Fl_01	31.34	5.592	480.74	-16.28	0.0000	79.30	5.489	478.17	830.5	0.1636	1.40064	0.0001750	31.34	0.005	0.0002
FS14	Fan.Fl_O	267.12	6.141	495.19	-12.82	0.0000	624.61	5.322	475.33	2606.7	0.4568	1.40049	0.0001750	267.07	0.047	0.0002
FS23	LPC.Fl_O	31.34	7.841	538.01	-2.55	0.0000	59.83	7.497	531.15	412.6	0.2542	1.39993	0.0001750	31.34	0.005	0.0002
FS24	VaporIN.Fl_O	31.54	7.841	546.24	-35.66	0.0000	60.66	7.485	539.05	412.6	0.2586	1.39896	0.0062976	31.34	0.197	0.0063
FS25	Bleed2.Fl_O	26.81	7.841	546.24	-35.66	0.0000	51.56	7.588	541.15	412.6	0.2172	1.39896	0.0062976	26.64	0.168	0.0063
FS3	HPC.Fl_O	25.51	45.449	976.73	69.61	0.0000	11.32	40.035	943.07	49.7	0.4320	1.38116	0.0062976	25.35	0.160	0.0063
FS36	Bleed3.Fl_O	19.77	45.449	976.73	69.61	0.0000	8.77	42.340	957.80	49.3	0.3218	1.38116	0.0062976	19.64	0.124	0.0063
FS4	Burner.Fl_O	19.99	44.402	1729.03	57.17	0.0113	12.08	41.920	1704.47	74.6	0.2951	1.32986	0.0062976	19.64	0.124	0.0199
FS45	HPT.Fl_O	26.71	11.128	1151.23	-44.72	0.0084	52.56	10.164	1123.67	265.4	0.3664	1.36435	0.0062976	26.33	0.166	0.0165
FS49	LPT.Fl_O	27.03	4.713	949.82	-94.18	0.0083	114.04	4.541	940.17	860.2	0.2332	1.37726	0.0062976	26.64	0.168	0.0163
FS5	TEGV.Fl_O	27.03	4.713	949.89	-94.18	0.0083	114.05	4.541	940.24	860.2	0.2332	1.37725	0.0062976	26.64	0.168	0.0163
FS8	Core_Nozz.Fl_O	27.03	4.713	949.96	-94.18	0.0083	114.05	4.358	929.79	613.3	0.3388	1.37725	0.0062976	26.64	0.168	0.0163
FS17	FanDuctLkg.Fl_O	267.12	6.141	495.19	-12.82	0.0000	624.61	5.322	475.33	2606.7	0.4568	1.40049	0.0001750	267.07	0.047	0.0002
FS171	Bleed15.Fl_O	271.85	6.141	496.09	-13.22	0.0000	636.24	5.174	472.37	2481.9	0.5006	1.40047	0.0002809	271.77	0.076	0.0003
FS172	FanDuct.Fl_O	271.85	6.141	496.09	-13.22	0.0000	636.24	5.174	472.37	2481.9	0.5006	1.40047	0.0002809	271.77	0.076	0.0003
FS173	Byp_Nozz.Fl_O	271.85	6.141	496.09	-13.22	0.0000	636.24	4.358	449.74	2006.9	0.7172	1.40047	0.0002809	271.77	0.076	0.0003

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	675.80	1.098	0.9023	2251.777	1.0301	0.9036	-1309.6	-9547.00	52.70
LPC	79.30	1.402	0.8515	2251.777	1.1191	0.8584	-609.2	5.95	2.63
HPC	51.56	5.796	0.8135	8877.522	1.7881	0.8523	-3895.8	62.65	59.01
HPT	12.08	3.990	0.8755	219.098	1.3514	0.8539	3895.7		
LPT	52.56	2.361	0.8358	63.893	1.2096	0.8186	1918.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	785.22	1.096	0.9041	2230.307	0.0416	0.8607	1.0235	0.9980	0.9905
LPC	60.40	1.383	0.7655	0.595	0.0000	1.3129	1.0509	1.1123	0.0003
HPC	46.89	5.570	0.8219	8640.853	10.9296	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.907	0.8754	1.317	3.9074	12.6299	0.9723	1.0000	0.0003
LPT	0.81	2.024	0.8420	0.719	2.0237	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2592.60	5851.6
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2332	860.21
FanDuct	0.0000	0.5006	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.5220	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9110.4	2245.9	3895.7
LP_Shaft	2167.9	4648.8	1918.8

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9865	763.28	16.98	11.128
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3136	763.28	16.98	4.713
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	741.71	11.71	16.115
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	874.84	44.35	31.158
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	741.71	11.71	16.115
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	976.73	69.61	45.449
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	741.71	11.71	16.115

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1500	1.0000	1.0000	4.7304	546.24	-35.66	7.841
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.0607	976.73	69.61	44.402
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.6782	976.73	69.61	25.369
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	976.73	69.61	45.449
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	976.73	69.61	45.449
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	976.73	69.61	45.449
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	495.19	-12.82	6.141
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	495.19	-12.82	6.141
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	495.19	-12.82	6.141
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	495.19	-12.82	6.141

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1728.98	0.9995	0.0230	0.22190	0.01130

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.081	0.9801	1.0000	0.9800	613.40	0.339	493.4	414.4
Byp_Nozz	1.409	0.9800	1.0000	0.9800	2006.86	0.717	731.0	6176.0

```
**********************************************************************************************************************************
Date:05/10/13    Time:11:42:12    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 27/ 55/ 2/24    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 492.48    Stator 1 exit: 496.71    Stator 2 inlet: 501.55    Stator 2 exit: 503.48
            Stator 3 inlet: 508.81    Stator 3 exit: 510.32    Stator 4 inlet: 515.40    Stator 4 exit: 516.48
            Stator 5 inlet: 520.20    Stator 5 exit: 521.01            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.02
Fan Bypass Relative Humidity       4.18
LPC Inlet Relative Humidity        4.02
LPC Exit Relative Humidity         1.33
HPC Relative Humidity              0.07
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity           582.56    Fan/LPC Inlet Flow Velocity        194.07
Ambient Static Pressure           5.30    Fan/LPC Inlet Static Pressure        6.37
Ambient Static Temperature      463.14    Fan/LPC Inlet Static Temperature   488.28
Additional Water at LPC Exit    0.0055547
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.552	25666.0	36.00	322.69	740.5	1.1395	843.77	7.1911	582.56	7.220	0.857	10.000	1731.5	1634.9	1153.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	322.69	6.516	491.41	-14.47	0.0000	708.40	5.297	463.14	2584.4	0.5520	1.40052	0.0003043	322.59	0.098	0.0003
FS1	Inlet.Fl_O	322.69	6.516	491.41	-14.47	0.0000	708.40	6.115	482.56	4168.2	0.3026	1.40052	0.0003043	322.59	0.098	0.0003
FS12	Splitter.Fl_02	283.30	6.513	491.41	-14.47	0.0000	622.22	6.079	481.83	3531.8	0.3152	1.40052	0.0003043	283.21	0.086	0.0003
FS2	Splitter.Fl_01	39.40	6.513	491.41	-14.47	0.0000	86.53	6.369	488.28	830.5	0.1791	1.40052	0.0003043	39.38	0.012	0.0003
FS14	Fan.Fl_O	283.30	7.049	503.88	-11.48	0.0000	582.12	6.253	486.89	2606.7	0.4173	1.40038	0.0003043	283.21	0.086	0.0003
FS23	LPC.Fl_O	39.40	8.231	532.47	-4.63	0.0000	71.27	7.706	522.54	412.6	0.3082	1.40000	0.0003043	39.38	0.012	0.0003
FS24	VaporIN.Fl_O	39.61	8.231	540.00	-34.67	0.0000	72.17	7.690	529.62	412.6	0.3133	1.39912	0.0058591	39.38	0.231	0.0058
FS25	Bleed2.Fl_O	27.73	8.231	540.00	-34.67	0.0000	50.52	7.976	535.17	412.6	0.2126	1.39912	0.0058591	27.57	0.162	0.0058
FS3	HPC.Fl_O	26.38	47.048	962.60	68.55	0.0000	11.23	41.550	930.03	49.7	0.4275	1.38208	0.0058591	26.23	0.154	0.0058
FS36	Bleed3.Fl_O	20.45	47.048	962.60	68.55	0.0000	8.70	43.886	944.24	49.3	0.3187	1.38208	0.0058591	20.33	0.119	0.0058
FS4	Burner.Fl_O	20.68	45.964	1731.49	55.86	0.0115	12.08	43.394	1706.91	74.6	0.2951	1.32966	0.0058591	20.33	0.119	0.0197
FS45	HPT.Fl_O	27.64	11.900	1157.81	-43.90	0.0086	51.00	10.937	1131.99	265.4	0.3536	1.36388	0.0058591	27.25	0.160	0.0162
FS49	LPT.Fl_O	27.96	5.619	980.30	-87.34	0.0085	100.55	5.460	972.68	860.2	0.2042	1.37534	0.0058591	27.57	0.162	0.0161
FS5	TEGV.Fl_O	27.96	5.619	980.37	-87.34	0.0085	100.56	5.460	972.75	860.2	0.2042	1.37534	0.0058591	27.57	0.162	0.0161
FS8	Core_Nozz.Fl_O	27.96	5.619	980.44	-87.34	0.0085	100.56	5.297	964.77	613.4	0.2939	1.37533	0.0058591	27.57	0.162	0.0161
FS17	FanDuctLkg.Fl_O	283.30	7.049	503.88	-11.48	0.0000	582.12	6.253	486.89	2606.7	0.4173	1.40038	0.0003043	283.21	0.086	0.0003
FS171	Bleed15.Fl_O	295.18	7.049	505.34	-12.42	0.0000	607.42	6.059	483.94	2481.9	0.4699	1.40033	0.0005268	295.03	0.155	0.0005
FS172	FanDuct.Fl_O	295.18	7.049	505.34	-12.42	0.0000	607.42	6.059	483.94	2481.9	0.4699	1.40033	0.0005268	295.03	0.155	0.0005
FS173	Byp_Nozz.Fl_O	295.18	7.049	505.34	-12.42	0.0000	607.42	5.297	465.68	2006.9	0.6521	1.40033	0.0005268	295.03	0.155	0.0005

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	622.22	1.082	0.9026	2036.846	1.0254	0.9037	-1197.9	-2694.73	49.93
LPC	86.53	1.264	0.8285	2036.846	1.0835	0.8341	-548.9	6.40	2.41
HPC	50.52	5.716	0.8119	8844.399	1.7826	0.8508	-3951.4	62.08	58.34
HPT	12.08	3.863	0.8762	216.874	1.3421	0.8553	3951.4		
LPT	51.00	2.118	0.8253	58.266	1.1782	0.8097	1746.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	722.96	1.080	0.9044	2017.425	0.0425	0.8607	1.0235	0.9980	0.9905
LPC	53.21	1.308	0.7606	0.538	0.0000	1.6261	0.8553	1.0894	0.0003
HPC	45.95	5.494	0.8203	8608.613	10.9778	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.783	0.8762	1.303	3.7833	12.6299	0.9723	1.0000	0.0003
LPT	0.78	1.841	0.8315	0.655	1.8408	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2584.38	5842.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2042	860.21
FanDuct	0.0000	0.4699	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.1911	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9024.4	2299.7	3951.4
LP_Shaft	1982.6	4627.6	1746.8

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0205	752.98	16.94	11.900
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3244	752.98	16.94	5.619
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	731.80	11.78	16.771
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	862.52	43.78	32.297
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	731.80	11.78	16.771
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	962.60	68.55	47.048
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	731.80	11.78	16.771

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.3000	1.0000	1.0000	11.8842	540.00	-34.67	8.231
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.1662	962.60	68.55	45.964
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.7705	962.60	68.55	26.479
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	962.60	68.55	47.048
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	962.60	68.55	47.048
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	962.60	68.55	47.048
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	503.88	-11.48	7.049
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	503.88	-11.48	7.049
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	503.88	-11.48	7.049
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	503.88	-11.48	7.049

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1731.44	0.9995	0.0230	0.23438	0.01153

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.061	0.9801	1.0000	0.9800	613.40	0.294	435.6	378.6
Byp_Nozz	1.331	0.9800	1.0000	0.9800	2006.86	0.652	676.3	6204.7

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**********************************************************************************************************************************
Date:05/10/13    Time:11:42:56    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 43/ 71/ 2/40    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 505.44    Stator 1 exit: 508.48    Stator 2 inlet: 511.40    Stator 2 exit: 512.25
            Stator 3 inlet: 515.70    Stator 3 exit: 516.12    Stator 4 inlet: 519.49    Stator 4 exit: 519.63
            Stator 5 inlet: 521.64    Stator 5 exit: 521.58            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         6.02
Fan Bypass Relative Humidity       5.16
LPC Inlet Relative Humidity        5.19
LPC Exit Relative Humidity         2.75
HPC Relative Humidity              0.09
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          528.20    Fan/LPC Inlet Flow Velocity        201.72
Ambient Static Pressure          6.74    Fan/LPC Inlet Static Pressure        7.75
Ambient Static Temperature     483.18    Fan/LPC Inlet Static Temperature   503.02
Additional Water at LPC Exit   0.0064451
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.490	20047.0	36.00	358.30	801.9	1.1573	928.02	6.4043	528.20	6.292	0.888	10.000	1758.3	1658.1	1181.6

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	358.30	7.943	506.41	-12.46	0.0000	655.03	6.740	483.18	2595.3	0.4900	1.40031	0.0005787	358.09	0.207	0.0006
FS1	Inlet.Fl_O	358.30	7.943	506.41	-12.46	0.0000	655.03	7.529	498.72	4168.2	0.2775	1.40031	0.0005787	358.09	0.207	0.0006
FS12	Splitter.Fl_02	309.91	7.939	506.41	-12.46	0.0000	566.84	7.507	498.36	3531.8	0.2840	1.40031	0.0005787	309.73	0.179	0.0006
FS2	Splitter.Fl_01	48.39	7.939	506.41	-12.46	0.0000	88.51	7.755	503.02	830.5	0.1834	1.40031	0.0005787	48.36	0.028	0.0006
FS14	Fan.Fl_O	309.91	8.493	517.30	-9.85	0.0000	535.56	7.699	503.00	2606.7	0.3769	1.40017	0.0005787	309.73	0.179	0.0006
FS23	LPC.Fl_O	48.39	9.116	535.13	-5.57	0.0000	79.24	8.384	522.47	412.6	0.3480	1.39992	0.0005787	48.36	0.028	0.0006
FS24	VaporIN.Fl_O	48.70	9.116	543.81	-40.38	0.0000	80.39	8.357	530.48	412.6	0.3549	1.39890	0.0070238	48.36	0.340	0.0070
FS25	Bleed2.Fl_O	29.22	9.116	543.81	-40.38	0.0000	48.23	8.860	539.40	412.6	0.2025	1.39890	0.0070238	29.02	0.204	0.0070
FS3	HPC.Fl_O	27.80	49.978	958.61	61.03	0.0000	11.11	44.269	926.94	49.7	0.4222	1.38214	0.0070238	27.61	0.194	0.0070
FS36	Bleed3.Fl_O	21.55	49.978	958.61	61.03	0.0000	8.61	46.690	940.72	49.3	0.3152	1.38214	0.0070238	21.40	0.150	0.0070
FS4	Burner.Fl_O	21.81	48.827	1758.30	47.88	0.0120	12.08	46.093	1733.41	74.6	0.2955	1.32791	0.0070238	21.40	0.150	0.0215
FS45	HPT.Fl_O	29.14	13.336	1186.38	-49.92	0.0090	48.56	12.366	1162.79	265.4	0.3345	1.36163	0.0070238	28.68	0.201	0.0178
FS49	LPT.Fl_O	29.48	7.035	1030.55	-88.02	0.0089	86.80	6.889	1024.69	860.2	0.1754	1.37175	0.0070238	29.02	0.204	0.0177
FS5	TEGV.Fl_O	29.48	7.035	1030.62	-88.02	0.0089	86.80	6.889	1024.76	860.2	0.1754	1.37175	0.0070238	29.02	0.204	0.0177
FS8	Core_Nozz.Fl_O	29.48	7.035	1030.69	-88.02	0.0089	86.81	6.740	1018.78	613.5	0.2506	1.37174	0.0070238	29.02	0.204	0.0177
FS17	FanDuctLkg.Fl_O	309.91	8.493	517.30	-9.85	0.0000	535.56	7.699	503.00	2606.7	0.3769	1.40017	0.0005787	309.73	0.179	0.0006
FS171	Bleed15.Fl_O	329.39	8.493	518.88	-11.65	0.0000	570.09	7.467	500.14	2481.9	0.4326	1.40010	0.0009575	329.07	0.315	0.0010
FS172	FanDuct.Fl_O	329.39	8.493	518.88	-11.65	0.0000	570.09	7.467	500.14	2481.9	0.4326	1.40010	0.0009575	329.07	0.315	0.0010
FS173	Byp_Nozz.Fl_O	329.39	8.493	518.88	-11.65	0.0000	570.09	6.740	485.70	2006.8	0.5841	1.40010	0.0009575	329.07	0.315	0.0010

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	566.84	1.070	0.9044	1828.989	1.0215	0.9053	-1146.2	-1852.73	46.50
LPC	88.51	1.148	0.7107	1828.989	1.0567	0.7163	-471.9	7.06	2.10
HPC	48.23	5.482	0.8076	8767.052	1.7628	0.8465	-4091.0	62.46	58.43
HPT	12.08	3.661	0.8778	214.084	1.3260	0.8581	4090.9		
LPT	48.56	1.896	0.8176	52.469	1.1479	0.8039	1618.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	658.62	1.068	0.9062	1811.550	0.0438	0.8607	1.0235	0.9980	0.9905
LPC	46.43	1.242	0.7552	0.483	0.0000	1.9063	0.6129	0.9411	0.0003
HPC	43.87	5.271	0.8159	8533.328	10.9880	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.587	0.8778	1.287	3.5875	12.6299	0.9723	1.0000	0.0003
LPT	0.74	1.674	0.8237	0.590	1.6736	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2595.25	5882.2
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1754	860.21
FanDuct	0.0000	0.4326	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.4043	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8977.0	2393.4	4090.9
LP_Shaft	1807.2	4702.7	1618.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0753	752.84	10.33	13.336
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3419	752.84	10.33	7.035
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.05	5.26	18.106
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	860.35	36.69	34.450
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.05	5.26	18.106
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	958.61	61.03	49.978
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.05	5.26	18.106

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	19.4809	543.81	-40.38	9.116
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.3365	958.61	61.03	48.827
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.9195	958.61	61.03	28.526
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	958.61	61.03	49.978
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	958.61	61.03	49.978
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	958.61	61.03	49.978
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	517.30	-9.85	8.493
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	517.30	-9.85	8.493
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	517.30	-9.85	8.493
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	517.30	-9.85	8.493

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1758.25	0.9995	0.0230	0.25778	0.01205

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.044	0.9801	1.0000	0.9800	613.40	0.251	381.3	349.4
Byp_Nozz	1.260	0.9800	1.0000	0.9800	2006.86	0.584	618.8	6334.7

5μm, 4g/m^3, ISA +36R

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**********************************************************************************************************************************
Date:07/05/13    Time:11:40:21    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 13/ 27/ 1/11    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 484.24    Stator 1 exit: 492.23    Stator 2 inlet: 502.23    Stator 2 exit: 507.43
            Stator 3 inlet: 517.61    Stator 3 exit: 522.26    Stator 4 inlet: 531.67    Stator 4 exit: 535.70
            Stator 5 inlet: 543.48    Stator 5 exit: 546.96            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.98
Fan Bypass Relative Humidity       1.38
LPC Inlet Relative Humidity        1.30
LPC Exit Relative Humidity         0.12
HPC Relative Humidity              0.07
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity            789.49    Fan/LPC Inlet Flow Velocity        188.03
Ambient Static Pressure            2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature       425.97    Fan/LPC Inlet Static Temperature   474.97
Additional Water at LPC Exit     0.0136991
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	252.55	675.0	1.0748	725.47	8.8208	789.49	9.536	0.736	10.000	1804.6	1708.2	1191.6

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	252.55	4.267	477.92	-16.44	0.0000	834.98	2.854	425.97	2547.4	0.7800	1.40068	0.0000851	252.52	0.021	0.0001
FS1	Inlet.Fl_O	252.55	4.267	477.92	-16.44	0.0000	834.98	3.890	465.46	4168.2	0.3656	1.40068	0.0000851	252.52	0.021	0.0001
FS12	Splitter.Fl_02	226.83	4.265	477.92	-16.44	0.0000	750.33	3.835	463.62	3531.8	0.3923	1.40068	0.0000851	226.81	0.019	0.0001
FS2	Splitter.Fl_01	25.72	4.265	477.92	-16.44	0.0000	85.06	4.173	474.97	830.5	0.1759	1.40068	0.0000851	25.71	0.002	0.0001
FS14	Fan.Fl_O	226.83	4.839	497.33	-11.79	0.0000	674.54	4.059	472.95	2606.7	0.5072	1.40048	0.0000851	226.81	0.019	0.0001
FS23	LPC.Fl_O	25.72	6.717	557.91	2.75	0.0000	58.35	6.437	551.16	412.6	0.2474	1.39963	0.0000851	25.71	0.002	0.0001
FS24	VaporIN.Fl_O	26.07	6.717	575.55	-70.86	0.0000	60.08	6.417	568.11	412.6	0.2567	1.39743	0.0137842	25.71	0.354	0.0136
FS25	Bleed2.Fl_O	23.46	6.717	575.55	-70.86	0.0000	54.07	6.476	569.61	412.6	0.2292	1.39743	0.0137842	23.14	0.319	0.0136
FS3	HPC.Fl_O	22.32	40.686	1037.91	43.38	0.0000	11.41	35.721	1001.55	49.7	0.4384	1.37623	0.0137842	22.02	0.304	0.0136
FS36	Bleed3.Fl_O	17.30	40.686	1037.91	43.38	0.0000	8.84	37.841	1017.51	49.3	0.3261	1.37623	0.0137842	17.07	0.235	0.0136
FS4	Burner.Fl_O	17.50	39.749	1804.55	30.77	0.0118	12.07	37.519	1779.12	74.6	0.2961	1.32499	0.0137842	17.07	0.235	0.0276
FS45	HPT.Fl_O	23.39	9.542	1195.90	-79.98	0.0088	54.69	8.634	1164.58	265.4	0.3858	1.36020	0.0137842	22.87	0.315	0.0241
FS49	LPT.Fl_O	23.66	3.268	936.79	-144.66	0.0087	143.03	3.074	921.23	860.2	0.2992	1.37678	0.0137842	23.14	0.319	0.0240
FS5	TEGV.Fl_O	23.66	3.268	936.86	-144.66	0.0087	143.03	3.074	921.30	860.2	0.2992	1.37677	0.0137842	23.14	0.319	0.0240
FS8	Core_Nozz.Fl_O	23.66	3.268	936.93	-144.66	0.0087	143.04	2.854	902.80	613.4	0.4472	1.37677	0.0137842	23.14	0.319	0.0240
FS17	FanDuctLkg.Fl_O	226.83	4.839	497.33	-11.79	0.0000	674.54	4.059	472.95	2606.7	0.5072	1.40048	0.0000851	226.81	0.019	0.0001
FS171	Bleed15.Fl_O	229.44	4.839	498.23	-12.46	0.0000	682.90	3.925	469.25	2481.9	0.5552	1.40045	0.0002386	229.38	0.055	0.0002
FS172	FanDuct.Fl_O	229.44	4.839	498.23	-12.46	0.0000	682.90	3.925	469.25	2481.9	0.5552	1.40045	0.0002386	229.38	0.055	0.0002
FS173	Byp_Nozz.Fl_O	229.44	4.839	498.23	-12.46	0.0000	682.90	2.854	428.37	2006.9	0.9021	1.40045	0.0002386	229.38	0.055	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	750.33	1.135	0.9066	2595.218	1.0406	0.9083	-1492.9	1442.03	54.43
LPC	85.06	1.575	0.8285	2595.218	1.1674	0.8391	-698.1	7.05	3.93
HPC	54.07	6.057	0.8178	8959.420	1.8033	0.8563	-3700.2	62.16	58.80
HPT	12.07	4.166	0.8795	222.173	1.3620	0.8580	3700.2		
LPT	54.69	2.920	0.8601	72.037	1.2749	0.8411	2191.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	871.82	1.132	0.9085	2570.473	0.0416	0.8607	1.0235	0.9980	0.9905
LPC	75.08	1.534	0.7812	0.685	0.0000	1.1330	1.0768	1.0606	0.0003
HPC	49.18	5.819	0.8263	8720.568	10.9274	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.078	0.8795	1.335	4.0779	12.6299	0.9723	1.0000	0.0003
LPT	0.84	2.444	0.8665	0.810	2.4443	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2547.36	6197.0
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2992	860.21
FanDuct	0.0000	0.5552	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8208	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9437.9	2059.1	3700.2
LP_Shaft	2491.2	4619.2	2191.0

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8634	809.07	-13.74	9.542
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2745	809.07	-13.74	3.268
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	785.89	-19.46	14.190
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	928.77	15.96	27.778
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	785.89	-19.46	14.190
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	1037.91	43.38	40.686
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	785.89	-19.46	14.190

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6068	575.55	-70.86	6.717
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6788	1037.91	43.38	39.749
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3440	1037.91	43.38	22.471
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1037.91	43.38	40.686
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1037.91	43.38	40.686
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1037.91	43.38	40.686
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	497.33	-11.79	4.839
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	497.33	-11.79	4.839
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	497.33	-11.79	4.839
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	497.33	-11.79	4.839

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1804.50	0.9995	0.0230	0.20152	0.01181

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.145	0.9801	1.0000	0.9800	613.40	0.447	643.2	473.1
Byp_Nozz	1.696	0.9800	1.0000	0.9800	2006.86	0.902	897.3	6398.9

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**********************************************************************************************************************************
Date:07/05/13    Time:11:40:38    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 13/ 27/ 1/11    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 477.31    Stator 1 exit: 484.74    Stator 2 inlet: 494.04    Stator 2 exit: 498.85
            Stator 3 inlet: 508.36    Stator 3 exit: 512.69    Stator 4 inlet: 521.47    Stator 4 exit: 525.07
            Stator 5 inlet: 532.29    Stator 5 exit: 535.49            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.47
Fan Bypass Relative Humidity       1.77
LPC Inlet Relative Humidity        1.63
LPC Exit Relative Humidity         0.16
HPC Relative Humidity              0.06
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity           738.88    Fan/LPC Inlet Flow Velocity        182.53
Ambient Static Pressure           2.95    Fan/LPC Inlet Static Pressure        4.11
Ambient Static Temperature      425.97    Fan/LPC Inlet Static Temperature   468.70
Additional Water at LPC Exit    0.0100863

                                        SUMMARY OUTPUT DATA
    MN       alt     dTamb         W         Fn       TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4       T41      T49
 0.730   38334.0     36.00    245.68      648.7     1.0595     687.25     8.8534    738.88     9.250     0.764       10.000      1766.2   1670.8   1166.7


                                        FLOW STATION DATA
                                  W        Pt        Tt        ht       FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O           245.68     4.201    471.48    -17.97    0.0000    819.36     2.947    425.97    2564.5  0.7300   1.40073   0.0000824    245.66    0.020    0.0001
FS1   Inlet.Fl_O             245.68     4.201    471.48    -17.97    0.0000    819.36     3.846    459.70    4168.2  0.3575   1.40073   0.0000824    245.66    0.020    0.0001
FS12  Splitter.Fl_02         220.75     4.199    471.48    -17.97    0.0000    736.57     3.794    457.97    3531.8  0.3836   1.40073   0.0000824    220.73    0.018    0.0001
FS2   Splitter.Fl_01          24.93     4.199    471.48    -17.97    0.0000     83.20     4.113    468.70     830.5  0.1719   1.40073   0.0000824     24.93    0.002    0.0001
FS14  Fan.Fl_O              220.75     4.727    489.42    -13.67    0.0000    666.62     3.988    466.17    2606.7  0.4989   1.40057   0.0000824    220.73    0.018    0.0001
FS23  LPC.Fl_O               24.93     6.461    545.68     -0.17    0.0000     58.17     6.193    539.13     412.6  0.2466   1.39982   0.0000824     24.93    0.002    0.0001
FS24  VaporIN.Fl_O           25.19     6.461    558.99    -54.53    0.0000     59.47     6.179    551.93     412.6  0.2535   1.39823   0.0101687     24.93    0.254    0.0101
FS25  Bleed2.Fl_O            22.67     6.461    558.99    -54.53    0.0000     53.53     6.234    553.35     412.6  0.2264   1.39823   0.0101687     22.44    0.228    0.0101
FS3   HPC.Fl_O               21.57    38.862   1007.76     55.78    0.0000     11.37    34.170    972.69      49.7  0.4356   1.37866   0.0101687     21.35    0.217    0.0101
FS36  Bleed3.Fl_O            16.71    38.862   1007.76     55.78    0.0000      8.81    36.171    988.06      49.3  0.3241   1.37866   0.0101687     16.55    0.168    0.0101
FS4   Burner.Fl_O            16.91    37.967   1766.18     43.27    0.0115     12.08    35.841   1741.19      74.6  0.2956   1.32742   0.0101687     16.55    0.168    0.0239
FS45  HPT.Fl_O               22.59     9.229   1170.97    -63.61    0.0086     54.06     8.375   1141.07     265.4  0.3796   1.36242   0.0101687     22.18    0.226    0.0204
FS49  LPT.Fl_O               22.86     3.316    928.08   -123.81    0.0085    135.52     3.141    914.38     860.2  0.2814   1.37792   0.0101687     22.44    0.228    0.0203
FS5   TEGV.Fl_O              22.86     3.316    928.15   -123.81    0.0085    135.53     3.141    914.45     860.2  0.2814   1.37792   0.0101687     22.44    0.228    0.0203
FS8   Core_Nozz.Fl_O         22.86     3.316    928.22   -123.81    0.0085    135.53     2.947    898.63     613.4  0.4168   1.37791   0.0101687     22.44    0.228    0.0203
FS17  FanDuctLkg.Fl_O       220.75     4.727    489.42    -13.67    0.0000    666.62     3.988    466.17    2606.7  0.4989   1.40057   0.0000824    220.73    0.018    0.0001
FS171 Bleed15.Fl_O           223.27     4.727    490.21    -14.13    0.0000    674.77     3.862    462.66    2481.9  0.5452   1.40055   0.0001950    223.23    0.044    0.0002
FS172 FanDuct.Fl_O           223.27     4.727    490.21    -14.13    0.0000    674.77     3.862    462.66    2481.9  0.5452   1.40055   0.0001950    223.23    0.044    0.0002
FS173 Byp_Nozz.Fl_O          223.27     4.727    490.21    -14.13    0.0000    674.77     2.947    428.20    2006.9  0.8500   1.40055   0.0001950    223.23    0.044    0.0002

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff        Nc       TR   efPoly        pwr       SMN      SMW
Fan       736.57   1.126    0.9057  2525.346   1.0381   0.9073    -1343.2   1950.43    54.42
LPC        83.20   1.539    0.8328  2525.346   1.1574   0.8426     -627.9      6.84     3.41
HPC        53.53   6.015    0.8173  8942.041   1.8028   0.8558    -3452.0     61.87    58.46
HPT        12.08   4.114    0.8778   220.891   1.3596   0.8561     3452.0
LPT        54.06   2.783    0.8534    70.361   1.2598   0.8346     1971.1

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap     NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan        855.83   1.123   0.9075  2501.267    0.0415      0.8607    1.0235    0.9980    0.9905
LPC         72.05   1.503   0.7779     0.667    0.0000      1.1547    1.0710    1.0706    0.0003
HPC         48.68   5.779   0.8257  8703.652   10.9516      1.0995    1.0494    0.9898    0.9733
HPT          0.96   4.028   0.8778     1.328    4.0278     12.6299    0.9723    1.0000    0.0003
LPT          0.83   2.341   0.8598     0.791    2.3413     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2564.47	5642.2

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2814	860.21
FanDuct	0.0000	0.5452	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8534	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9283.1	1953.0	3452.0
LP_Shaft	2407.7	4299.6	1971.1

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8341	785.45	0.62	9.229
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2652	785.45	0.62	3.316
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	762.96	-4.89	13.589
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	901.70	29.30	26.550
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	762.96	-4.89	13.589
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	1007.76	55.78	38.862
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	762.96	-4.89	13.589

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5185	558.99	-54.53	6.461
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.5881	1007.76	55.78	37.967
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.2647	1007.76	55.78	21.529
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1007.76	55.78	38.862
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1007.76	55.78	38.862
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1007.76	55.78	38.862
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	489.42	-13.67	4.727
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	489.42	-13.67	4.727
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	489.42	-13.67	4.727
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	489.42	-13.67	4.727

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1766.13	0.9995	0.0230	0.19090	0.01154

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.125	0.9801	1.0000	0.9800	613.40	0.417	597.7	424.6
Byp_Nozz	1.604	0.9800	1.0000	0.9800	2006.86	0.850	845.3	5866.2

```
**********************************************************************************************************************************
Date:07/05/13    Time:11:40:55    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 13/ 27/ 1/11    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 475.18    Stator 1 exit: 482.41    Stator 2 inlet: 491.46    Stator 2 exit: 496.13
            Stator 3 inlet: 505.38    Stator 3 exit: 509.60    Stator 4 inlet: 518.16    Stator 4 exit: 521.66
            Stator 5 inlet: 528.65    Stator 5 exit: 531.75            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.64
Fan Bypass Relative Humidity       1.92
LPC Inlet Relative Humidity        1.75
LPC Exit Relative Humidity         0.18
HPC Relative Humidity              0.06
Drop Diameter               0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          722.68    Fan/LPC Inlet Flow Velocity        180.06
Ambient Static Pressure          3.09    Fan/LPC Inlet Static Pressure        4.25
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   466.80
Additional Water at LPC Exit   0.0091788
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.714	37357.0	36.00	252.23	659.2	1.0582	697.55	8.8837	722.68	9.121	0.772	10.000	1752.6	1657.6	1158.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	252.23	4.339	469.50	-18.42	0.0000	812.74	3.088	425.97	2568.3	0.7140	1.40075	0.0000786	252.21	0.020	0.0001
FS1	Inlet.Fl_O	252.23	4.339	469.50	-18.42	0.0000	812.74	3.979	457.99	4168.2	0.3541	1.40075	0.0000786	252.21	0.020	0.0001
FS12	Splitter.Fl_02	226.71	4.337	469.50	-18.42	0.0000	730.87	3.925	456.30	3531.8	0.3801	1.40075	0.0000786	226.69	0.018	0.0001
FS2	Splitter.Fl_01	25.52	4.337	469.50	-18.42	0.0000	82.27	4.250	466.80	830.5	0.1700	1.40075	0.0000786	25.52	0.002	0.0001
FS14	Fan.Fl_O	226.71	4.867	486.90	-14.25	0.0000	663.20	4.116	464.09	2606.7	0.4953	1.40060	0.0000786	226.69	0.018	0.0001
FS23	LPC.Fl_O	25.52	6.610	541.65	-1.12	0.0000	57.98	6.338	535.19	412.6	0.2457	1.39989	0.0000786	25.52	0.002	0.0001
FS24	VaporIN.Fl_O	25.75	6.610	553.85	-50.63	0.0000	59.17	6.325	546.93	412.6	0.2520	1.39844	0.0092574	25.52	0.236	0.0092
FS25	Bleed2.Fl_O	23.18	6.610	553.85	-50.63	0.0000	53.25	6.381	548.31	412.6	0.2251	1.39844	0.0092574	22.97	0.213	0.0092
FS3	HPC.Fl_O	22.05	39.578	997.72	58.33	0.0000	11.36	34.812	963.06	49.7	0.4348	1.37943	0.0092574	21.85	0.202	0.0092
FS36	Bleed3.Fl_O	17.09	39.578	997.72	58.33	0.0000	8.80	36.844	978.25	49.3	0.3236	1.37943	0.0092574	16.94	0.157	0.0092
FS4	Burner.Fl_O	17.29	38.666	1752.62	45.89	0.0114	12.08	36.501	1727.80	74.6	0.2955	1.32824	0.0092574	16.94	0.157	0.0229
FS45	HPT.Fl_O	23.10	9.441	1162.36	-59.66	0.0085	53.83	8.577	1132.96	265.4	0.3775	1.36315	0.0092574	22.70	0.210	0.0194
FS49	LPT.Fl_O	23.37	3.455	925.40	-118.27	0.0084	132.79	3.281	912.33	860.2	0.2751	1.37825	0.0092574	22.97	0.213	0.0193
FS5	TEGV.Fl_O	23.37	3.455	925.47	-118.27	0.0084	132.80	3.281	912.40	860.2	0.2751	1.37825	0.0092574	22.97	0.213	0.0193
FS8	Core_Nozz.Fl_O	23.37	3.455	925.54	-118.27	0.0084	132.80	3.088	897.46	613.4	0.4062	1.37824	0.0092574	22.97	0.213	0.0193
FS17	FanDuctLkg.Fl_O	226.71	4.867	486.90	-14.25	0.0000	663.20	4.116	464.09	2606.7	0.4953	1.40060	0.0000786	226.69	0.018	0.0001
FS171	Bleed15.Fl_O	229.28	4.867	487.66	-14.66	0.0000	671.26	3.989	460.66	2481.9	0.5409	1.40058	0.0001808	229.24	0.041	0.0002
FS172	FanDuct.Fl_O	229.28	4.867	487.66	-14.66	0.0000	671.26	3.989	460.66	2481.9	0.5409	1.40058	0.0001808	229.24	0.041	0.0002
FS173	Byp_Nozz.Fl_O	229.28	4.867	487.66	-14.66	0.0000	671.26	3.088	428.15	2006.9	0.8328	1.40058	0.0001808	229.24	0.041	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	730.87	1.122	0.9052	2496.952	1.0371	0.9068	-1337.7	2278.73	54.38
LPC	82.27	1.524	0.8333	2496.952	1.1537	0.8429	-624.7	6.75	3.33
HPC	53.25	5.987	0.8168	8933.068	1.8014	0.8554	-3486.5	61.89	58.46
HPT	12.08	4.095	0.8771	220.499	1.3585	0.8554	3486.5		
LPT	53.83	2.733	0.8510	69.681	1.2540	0.8322	1962.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	849.20	1.119	0.9071	2473.144	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	70.82	1.490	0.7766	0.660	0.0000	1.1617	1.0693	1.0730	0.0003
HPC	48.43	5.752	0.8253	8694.918	10.9534	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.010	0.8771	1.325	4.0097	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.303	0.8573	0.784	2.3032	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2568.27	5665.4

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2751	860.21
FanDuct	0.0000	0.5409	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8837	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9231.0	1983.7	3486.5
LP_Shaft	2375.7	4338.5	1962.4

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8530	777.78	3.85	9.441
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2712	777.78	3.85	3.455
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	755.53	-1.60	13.863
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	892.77	32.18	27.050
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	755.53	-1.60	13.863
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	997.72	58.33	39.578
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	755.53	-1.60	13.863

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5754	553.85	-50.63	6.610
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6465	997.72	58.33	38.666
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3158	997.72	58.33	21.949
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	997.72	58.33	39.578
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	997.72	58.33	39.578
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	997.72	58.33	39.578
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	486.90	-14.25	4.867
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	486.90	-14.25	4.867
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	486.90	-14.25	4.867
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	486.90	-14.25	4.867

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1752.56	0.9995	0.0230	0.19376	0.01144

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.119	0.9801	1.0000	0.9800	613.40	0.406	582.0	422.8
Byp_Nozz	1.576	0.9800	1.0000	0.9800	2006.86	0.833	828.2	5901.8

```
**********************************************************************************************************************************
Date:07/05/13    Time:11:41:11    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 26/ 1/10    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 476.52    Stator 1 exit: 483.28    Stator 2 inlet: 491.72    Stator 2 exit: 496.06
            Stator 3 inlet: 504.69    Stator 3 exit: 508.58    Stator 4 inlet: 516.57    Stator 4 exit: 519.79
            Stator 5 inlet: 526.29    Stator 5 exit: 529.14            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.25
Fan Bypass Relative Humidity       2.45
LPC Inlet Relative Humidity        2.21
LPC Exit Relative Humidity         0.27
HPC Relative Humidity              0.07
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          682.24    Fan/LPC Inlet Flow Velocity        173.98
Ambient Static Pressure          3.58    Fan/LPC Inlet Static Pressure        4.74
Ambient Static Temperature     432.42    Fan/LPC Inlet Static Temperature   468.69
Additional Water at LPC Exit   0.0082762
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.669	34281.0	36.00	273.09	704.6	1.0548	743.15	8.9740	682.24	8.747	0.795	10.000	1739.1	1644.4	1151.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	273.09	4.831	471.21	-18.12	0.0000	791.83	3.578	432.42	2581.1	0.6690	1.40074	0.0000968	273.06	0.026	0.0001
FS1	Inlet.Fl_O	273.09	4.831	471.21	-18.12	0.0000	791.83	4.452	460.33	4168.2	0.3435	1.40074	0.0000968	273.06	0.026	0.0001
FS12	Splitter.Fl_02	245.71	4.829	471.21	-18.12	0.0000	712.80	4.395	458.71	3531.8	0.3688	1.40074	0.0000968	245.69	0.024	0.0001
FS2	Splitter.Fl_01	27.38	4.829	471.21	-18.12	0.0000	79.43	4.739	468.69	830.5	0.1639	1.40074	0.0000968	27.38	0.003	0.0001
FS14	Fan.Fl_O	245.71	5.374	487.42	-14.23	0.0000	651.37	4.580	465.64	2606.7	0.4832	1.40059	0.0000968	245.69	0.024	0.0001
FS23	LPC.Fl_O	27.38	7.161	538.52	-1.98	0.0000	57.25	6.875	532.27	412.6	0.2423	1.39994	0.0000968	27.38	0.003	0.0001
FS24	VaporIN.Fl_O	27.61	7.161	549.59	-46.65	0.0000	58.32	6.862	542.93	412.6	0.2480	1.39863	0.0083730	27.38	0.229	0.0083
FS25	Bleed2.Fl_O	24.85	7.161	549.59	-46.65	0.0000	52.48	6.921	544.26	412.6	0.2215	1.39863	0.0083730	24.64	0.206	0.0083
FS3	HPC.Fl_O	23.64	42.255	986.70	60.50	0.0000	11.34	37.189	952.53	49.7	0.4337	1.38024	0.0083730	23.44	0.196	0.0083
FS36	Bleed3.Fl_O	18.32	42.255	986.70	60.50	0.0000	8.79	39.347	967.49	49.3	0.3229	1.38024	0.0083730	18.17	0.152	0.0083
FS4	Burner.Fl_O	18.53	41.281	1739.08	48.11	0.0114	12.08	38.971	1714.41	74.6	0.2953	1.32905	0.0083730	18.17	0.152	0.0219
FS45	HPT.Fl_O	24.76	10.194	1155.34	-55.65	0.0085	53.28	9.283	1126.79	265.4	0.3726	1.36376	0.0083730	24.35	0.204	0.0185
FS49	LPT.Fl_O	25.05	3.943	932.36	-110.66	0.0084	125.18	3.768	920.78	860.2	0.2579	1.37799	0.0083730	24.64	0.206	0.0184
FS5	TEGV.Fl_O	25.05	3.943	932.43	-110.66	0.0084	125.18	3.768	920.85	860.2	0.2579	1.37799	0.0083730	24.64	0.206	0.0184
FS8	Core_Nozz.Fl_O	25.05	3.943	932.50	-110.66	0.0084	125.19	3.578	907.91	613.4	0.3780	1.37798	0.0083730	24.64	0.206	0.0184
FS17	FanDuctLkg.Fl_O	245.71	5.374	487.42	-14.23	0.0000	651.37	4.580	465.64	2606.7	0.4832	1.40059	0.0000968	245.69	0.024	0.0001
FS171	Bleed15.Fl_O	248.47	5.374	488.11	-14.59	0.0000	659.16	4.449	462.42	2481.9	0.5265	1.40057	0.0001880	248.42	0.047	0.0002
FS172	FanDuct.Fl_O	248.47	5.374	488.11	-14.59	0.0000	659.16	4.449	462.42	2481.9	0.5265	1.40057	0.0001880	248.42	0.047	0.0002
FS173	Byp_Nozz.Fl_O	248.47	5.374	488.11	-14.59	0.0000	659.16	3.578	434.49	2006.9	0.7848	1.40057	0.0001880	248.42	0.047	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	712.80	1.113	0.9041	2412.821	1.0344	0.9056	-1350.2	4577.10	54.02
LPC	79.43	1.483	0.8351	2412.821	1.1428	0.8440	-625.3	6.47	3.10
HPC	52.48	5.900	0.8154	8907.943	1.7953	0.8541	-3675.2	62.25	58.72
HPT	12.08	4.049	0.8762	219.883	1.3555	0.8546	3675.2		
LPT	53.28	2.585	0.8455	67.660	1.2370	0.8273	1975.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	828.20	1.110	0.9060	2389.815	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	67.18	1.453	0.7726	0.637	0.0000	1.1824	1.0675	1.0809	0.0003
HPC	47.73	5.669	0.8238	8670.463	10.9417	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.965	0.8762	1.321	3.9650	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.192	0.8517	0.761	2.1922	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2581.09	5790.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2579	860.21
FanDuct	0.0000	0.5265	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.9740	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9169.6	2105.1	3675.2
LP_Shaft	2299.8	4511.4	1975.5

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9143	770.04	6.93	10.194
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2907	770.04	6.93	3.943
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	748.13	1.57	14.882
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	883.30	34.78	28.919
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	748.13	1.57	14.882
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	986.70	60.50	42.255
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	748.13	1.57	14.882

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.7607	549.59	-46.65	7.161
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.8369	986.70	60.50	41.281
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.4824	986.70	60.50	23.500
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	986.70	60.50	42.255
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	986.70	60.50	42.255
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	986.70	60.50	42.255
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	487.42	-14.23	5.374
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	487.42	-14.23	5.374
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	487.42	-14.23	5.374
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	487.42	-14.23	5.374

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1739.03	0.9995	0.0230	0.20643	0.01136

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.102	0.9801	1.0000	0.9800	613.40	0.378	544.6	424.0
Byp_Nozz	1.502	0.9800	1.0000	0.9800	2006.86	0.785	786.2	6071.3

```
**********************************************************************************************************************************
Date:07/05/13    Time:11:41:37    Model:                             Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 15/ 43/ 2/12    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 484.81    Stator 1 exit: 490.63    Stator 2 inlet: 497.82    Stator 2 exit: 501.33
            Stator 3 inlet: 508.76    Stator 3 exit: 511.83    Stator 4 inlet: 518.73    Stator 4 exit: 521.22
            Stator 5 inlet: 526.83    Stator 5 exit: 529.00             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.20
Fan Bypass Relative Humidity       3.33
LPC Inlet Relative Humidity        3.05
LPC Exit Relative Humidity         0.54
HPC Relative Humidity              0.08
Drop Diameter                  0.0000050    Inlet Length                      40.00
Ambient Flow Velocity             630.80    Fan/LPC Inlet Flow Velocity      174.79
Ambient Static Pressure             4.36    Fan/LPC Inlet Static Pressure      5.49
Ambient Static Temperature        447.58    Fan/LPC Inlet Static Temperature  478.19
Additional Water at LPC Exit     0.0086245
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.608	30029.0	36.00	298.69	752.6	1.0677	803.55	8.5644	630.80	8.134	0.827	10.000	1737.5	1642.5	1153.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	298.69	5.595	480.74	-16.28	0.0000	755.31	4.358	447.58	2594.6	0.6080	1.40064	0.0001750	298.64	0.052	0.0002
FS1	Inlet.Fl_O	298.69	5.595	480.74	-16.28	0.0000	755.31	5.199	470.75	4168.2	0.3254	1.40064	0.0001750	298.64	0.052	0.0002
FS12	Splitter.Fl_02	267.46	5.592	480.74	-16.28	0.0000	676.68	5.145	469.42	3531.8	0.3470	1.40064	0.0001750	267.42	0.047	0.0002
FS2	Splitter.Fl_01	31.23	5.592	480.74	-16.28	0.0000	79.01	5.489	478.19	830.5	0.1630	1.40064	0.0001750	31.22	0.005	0.0002
FS14	Fan.Fl_O	267.46	6.146	495.32	-12.79	0.0000	624.95	5.325	475.42	2606.7	0.4571	1.40049	0.0001750	267.42	0.047	0.0002
FS23	LPC.Fl_O	31.23	7.860	538.42	-2.45	0.0000	59.49	7.519	531.63	412.6	0.2526	1.39993	0.0001750	31.22	0.005	0.0002
FS24	VaporIN.Fl_O	31.50	7.860	549.94	-48.98	0.0000	60.64	7.503	542.70	412.6	0.2587	1.39856	0.0087995	31.22	0.275	0.0087
FS25	Bleed2.Fl_O	26.77	7.860	549.94	-48.98	0.0000	51.55	7.606	544.81	412.6	0.2174	1.39856	0.0087995	26.54	0.234	0.0087
FS3	HPC.Fl_O	25.48	45.513	982.53	57.08	0.0000	11.32	40.077	948.62	49.7	0.4328	1.38043	0.0087995	25.25	0.222	0.0087
FS36	Bleed3.Fl_O	19.74	45.513	982.53	57.08	0.0000	8.77	42.392	963.46	49.3	0.3223	1.38043	0.0087995	19.57	0.172	0.0087
FS4	Burner.Fl_O	19.97	44.465	1737.49	44.68	0.0114	12.08	41.976	1712.83	74.6	0.2954	1.32903	0.0087995	19.57	0.172	0.0224
FS45	HPT.Fl_O	26.68	11.143	1157.45	-57.99	0.0085	52.57	10.176	1129.73	265.4	0.3669	1.36355	0.0087995	26.23	0.231	0.0190
FS49	LPT.Fl_O	27.00	4.715	954.80	-107.91	0.0084	114.18	4.541	945.07	860.2	0.2337	1.37656	0.0087995	26.54	0.234	0.0189
FS5	TEGV.Fl_O	27.00	4.715	954.87	-107.91	0.0084	114.18	4.541	945.14	860.2	0.2337	1.37655	0.0087995	26.54	0.234	0.0189
FS8	Core_Nozz.Fl_O	27.00	4.715	954.94	-107.91	0.0084	114.19	4.358	934.61	613.5	0.3395	1.37655	0.0087995	26.54	0.234	0.0189
FS17	FanDuctLkg.Fl_O	267.46	6.146	495.32	-12.79	0.0000	624.95	5.325	475.42	2606.7	0.4571	1.40049	0.0001750	267.42	0.047	0.0002
FS171	Bleed15.Fl_O	272.19	6.146	496.28	-13.42	0.0000	636.61	5.177	472.52	2481.9	0.5010	1.40046	0.0003234	272.10	0.088	0.0003
FS172	FanDuct.Fl_O	272.19	6.146	496.28	-13.42	0.0000	636.61	5.177	472.52	2481.9	0.5010	1.40046	0.0003234	272.10	0.088	0.0003
FS173	Byp_Nozz.Fl_O	272.19	6.146	496.28	-13.42	0.0000	636.61	4.358	449.80	2006.9	0.7181	1.40046	0.0003234	272.10	0.088	0.0003

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	676.68	1.099	0.9026	2258.248	1.0303	0.9040	-1323.1	-----.--	52.65
LPC	79.01	1.406	0.8518	2258.248	1.1200	0.8588	-611.3	5.94	2.65
HPC	51.55	5.790	0.8134	8877.027	1.7866	0.8522	-3920.1	62.78	59.14
HPT	12.08	3.990	0.8759	219.291	1.3510	0.8545	3920.1		
LPT	52.57	2.364	0.8366	63.904	1.2098	0.8195	1934.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	786.23	1.097	0.9045	2236.716	0.0417	0.8607	1.0235	0.9980	0.9905
LPC	60.62	1.385	0.7657	0.596	0.0000	1.3034	1.0536	1.1125	0.0003
HPC	46.88	5.565	0.8218	8640.372	10.9217	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.908	0.8759	1.318	3.9076	12.6299	0.9723	1.0000	0.0003
LPT	0.81	2.026	0.8429	0.719	2.0255	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2594.60	5856.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2337	860.21
FanDuct	0.0000	0.5010	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.5644	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9140.7	2252.4	3920.1
LP_Shaft	2174.1	4673.0	1934.4

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9853	768.08	4.05	11.143
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3133	768.08	4.05	4.715
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	746.40	-1.25	16.144
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	880.18	31.62	31.205
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	746.40	-1.25	16.144
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	982.53	57.08	45.513
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	746.40	-1.25	16.144

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1500	1.0000	1.0000	4.7248	549.94	-48.98	7.860
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.0571	982.53	57.08	44.465
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.6750	982.53	57.08	25.405
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	982.53	57.08	45.513
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	982.53	57.08	45.513
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	982.53	57.08	45.513
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	495.32	-12.79	6.146
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	495.32	-12.79	6.146
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	495.32	-12.79	6.146
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	495.32	-12.79	6.146

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1737.44	0.9995	0.0230	0.22321	0.01140

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.082	0.9801	1.0000	0.9800	613.40	0.340	496.0	416.2
Byp_Nozz	1.410	0.9800	1.0000	0.9800	2006.86	0.718	732.0	6192.5

```
**********************************************************************************************************************************
Date:07/05/13    Time:11:42:08    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 22/ 50/ 2/19    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 492.56    Stator 1 exit: 496.81    Stator 2 inlet: 501.69    Stator 2 exit: 503.65
            Stator 3 inlet: 508.98    Stator 3 exit: 510.49    Stator 4 inlet: 515.55    Stator 4 exit: 516.62
            Stator 5 inlet: 520.41    Stator 5 exit: 521.25            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.03
Fan Bypass Relative Humidity       4.17
LPC Inlet Relative Humidity        4.02
LPC Exit Relative Humidity         1.31
HPC Relative Humidity              0.09
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity           582.56    Fan/LPC Inlet Flow Velocity        193.47
Ambient Static Pressure           5.30    Fan/LPC Inlet Static Pressure        6.37
Ambient Static Temperature      463.14    Fan/LPC Inlet Static Temperature   488.30
Additional Water at LPC Exit    0.0078492
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.552	25666.0	36.00	322.90	753.8	1.1253	848.25	7.2209	582.56	7.231	0.857	10.000	1738.8	1642.0	1158.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	322.90	6.516	491.41	-14.47	0.0000	708.85	5.297	463.14	2586.1	0.5520	1.40052	0.0003043	322.80	0.098	0.0003
FS1	Inlet.Fl_O	322.90	6.516	491.41	-14.47	0.0000	708.85	6.114	482.55	4168.2	0.3029	1.40052	0.0003043	322.80	0.098	0.0003
FS12	Splitter.Fl_02	283.62	6.513	491.41	-14.47	0.0000	622.94	6.078	481.80	3531.8	0.3156	1.40052	0.0003043	283.54	0.086	0.0003
FS2	Splitter.Fl_01	39.28	6.513	491.41	-14.47	0.0000	86.27	6.369	488.30	830.5	0.1786	1.40052	0.0003043	39.27	0.012	0.0003
FS14	Fan.Fl_O	283.62	7.054	503.98	-11.46	0.0000	582.45	6.256	486.97	2606.7	0.4176	1.40038	0.0003043	283.54	0.086	0.0003
FS23	LPC.Fl_O	39.28	8.252	532.75	-4.56	0.0000	70.89	7.732	522.93	412.6	0.3064	1.39999	0.0003043	39.27	0.012	0.0003
FS24	VaporIN.Fl_O	39.59	8.252	543.34	-46.91	0.0000	72.15	7.709	532.89	412.6	0.3135	1.39876	0.0081535	39.27	0.320	0.0081
FS25	Bleed2.Fl_O	27.71	8.252	543.34	-46.91	0.0000	50.51	7.996	538.48	412.6	0.2127	1.39876	0.0081535	27.49	0.224	0.0081
FS3	HPC.Fl_O	26.37	47.121	967.79	57.00	0.0000	11.23	41.599	934.99	49.7	0.4282	1.38141	0.0081535	26.15	0.213	0.0081
FS36	Bleed3.Fl_O	20.43	47.121	967.79	57.00	0.0000	8.71	43.946	949.31	49.3	0.3192	1.38141	0.0081535	20.27	0.165	0.0081
FS4	Burner.Fl_O	20.67	46.036	1738.85	44.36	0.0116	12.08	43.458	1714.17	74.6	0.2954	1.32892	0.0081535	20.27	0.165	0.0221
FS45	HPT.Fl_O	27.62	11.915	1163.24	-56.09	0.0087	51.02	10.948	1137.27	265.4	0.3542	1.36316	0.0081535	27.16	0.221	0.0185
FS49	LPT.Fl_O	27.95	5.620	984.73	-99.91	0.0086	100.69	5.461	977.06	860.2	0.2047	1.37470	0.0081535	27.49	0.224	0.0184
FS5	TEGV.Fl_O	27.95	5.620	984.80	-99.90	0.0086	100.69	5.461	977.13	860.2	0.2047	1.37470	0.0081535	27.49	0.224	0.0184
FS8	Core_Nozz.Fl_O	27.95	5.620	984.87	-99.90	0.0086	100.70	5.297	969.08	613.4	0.2947	1.37469	0.0081535	27.49	0.224	0.0184
FS17	FanDuctLkg.Fl_O	283.62	7.054	503.98	-11.46	0.0000	582.45	6.256	486.97	2606.7	0.4176	1.40038	0.0003043	283.54	0.086	0.0003
FS171	Bleed15.Fl_O	295.50	7.054	505.57	-12.88	0.0000	607.80	6.062	484.13	2481.9	0.4703	1.40032	0.0006174	295.32	0.182	0.0006
FS172	FanDuct.Fl_O	295.50	7.054	505.57	-12.88	0.0000	607.80	6.062	484.13	2481.9	0.4703	1.40032	0.0006174	295.32	0.182	0.0006
FS173	Byp_Nozz.Fl_O	295.50	7.054	505.57	-12.88	0.0000	607.80	5.297	465.80	2006.9	0.6529	1.40032	0.0006174	295.32	0.182	0.0006

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	622.94	1.083	0.9030	2042.002	1.0256	0.9041	-1209.2	-2741.38	49.90
LPC	86.27	1.267	0.8322	2042.002	1.0841	0.8377	-551.1	6.39	2.41
HPC	50.51	5.710	0.8118	8843.919	1.7812	0.8506	-3975.2	62.22	58.48
HPT	12.08	3.864	0.8766	217.072	1.3418	0.8558	3975.1		
LPT	51.02	2.120	0.8262	58.277	1.1784	0.8106	1760.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	723.79	1.081	0.9048	2022.532	0.0425	0.8607	1.0235	0.9980	0.9905
LPC	53.38	1.310	0.7607	0.539	0.0000	1.6160	0.8609	1.0940	0.0003
HPC	45.94	5.488	0.8202	8608.145	10.9695	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.784	0.8766	1.305	3.7843	12.6299	0.9723	1.0000	0.0003
LPT	0.78	1.842	0.8323	0.656	1.8424	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2586.05	5846.6
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2047	860.21
FanDuct	0.0000	0.4703	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.2209	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9051.8	2306.5	3975.1
LP_Shaft	1987.6	4651.6	1760.4

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0197	757.29	5.04	11.915
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3242	757.29	5.04	5.620
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	736.02	-0.15	16.803
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	867.30	32.06	32.351
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	736.02	-0.15	16.803
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	967.79	57.00	47.121
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	736.02	-0.15	16.803

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.3000	1.0000	1.0000	11.8758	543.34	-46.91	8.252
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.1640	967.79	57.00	46.036
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.7685	967.79	57.00	26.519
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	967.79	57.00	47.121
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	967.79	57.00	47.121
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	967.79	57.00	47.121
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	503.98	-11.46	7.054
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	503.98	-11.46	7.054
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	503.98	-11.46	7.054
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	503.98	-11.46	7.054

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1738.79	0.9995	0.0230	0.23562	0.01163

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.061	0.9801	1.0000	0.9800	613.40	0.295	437.9	380.4
Byp_Nozz	1.332	0.9800	1.0000	0.9800	2006.86	0.653	677.2	6220.1

```
**********************************************************************************************************************************
Date:07/05/13    Time:11:42:59    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 67/ 95/ 2/64    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 505.52    Stator 1 exit: 508.54    Stator 2 inlet: 511.46    Stator 2 exit: 512.30
            Stator 3 inlet: 515.80    Stator 3 exit: 516.28    Stator 4 inlet: 519.69    Stator 4 exit: 519.86
            Stator 5 inlet: 521.92    Stator 5 exit: 521.88            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         6.02
Fan Bypass Relative Humidity       5.15
LPC Inlet Relative Humidity        5.19
LPC Exit Relative Humidity         2.72
HPC Relative Humidity              0.11
Drop Diameter                0.0000050    Inlet Length                        40.00
Ambient Flow Velocity          528.20    Fan/LPC Inlet Flow Velocity        201.18
Ambient Static Pressure          6.74    Fan/LPC Inlet Static Pressure        7.76
Ambient Static Temperature     483.18    Fan/LPC Inlet Static Temperature   503.04
Additional Water at LPC Exit   0.0087601

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet       T4      T41      T49
 0.490   20047.0    36.00    358.54      816.5    1.1432     933.41    6.4284    528.20     6.305     0.888         10.000    1765.8   1665.3   1187.1


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht       FAR        Wc        Ps        Ts      Aphy      MN      gamt        WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O          358.54     7.943    506.41    -12.46    0.0000    655.46     6.740    483.18    2597.0  0.4900   1.40031  0.0005787    358.33    0.207    0.0006
FS1   Inlet.Fl_O            358.54     7.943    506.41    -12.46    0.0000    655.46     7.529    498.71    4168.2  0.2777   1.40031  0.0005787    358.33    0.207    0.0006
FS12  Splitter.Fl_02        310.27     7.939    506.41    -12.46    0.0000    567.51     7.505    498.34    3531.8  0.2844   1.40031  0.0005787    310.09    0.179    0.0006
FS2   Splitter.Fl_01         48.27     7.939    506.41    -12.46    0.0000     88.28     7.756    503.04     830.5  0.1829   1.40031  0.0005787     48.24    0.028    0.0006
FS14  Fan.Fl_O              310.27     8.498    517.40     -9.82    0.0000    535.92     7.703    503.07    2606.7  0.3772   1.40017  0.0005787    310.09    0.179    0.0006
FS23  LPC.Fl_O               48.27     9.140    535.38     -5.51    0.0000     78.85     8.414    522.86     412.6  0.3460   1.39992  0.0005787     48.24    0.028    0.0006
FS24  VaporIN.Fl_O           48.69     9.140    547.12    -52.71    0.0000     80.40     8.377    533.69     412.6  0.3553   1.39854  0.0093388     48.24    0.450    0.0093
FS25  Bleed2.Fl_O            29.21     9.140    547.12    -52.71    0.0000     48.24     8.882    542.68     412.6  0.2027   1.39854  0.0093388     28.94    0.270    0.0093
FS3   HPC.Fl_O              27.80    50.079    963.81     49.39    0.0000     11.12    44.343    931.92      49.7  0.4229   1.38147  0.0093388     27.54    0.257    0.0093
FS36  Bleed3.Fl_O            21.54    50.079    963.81     49.39    0.0000      8.62    46.776    945.80      49.3  0.3157   1.38147  0.0093388     21.34    0.199    0.0093
FS4   Burner.Fl_O            21.80    48.925   1765.81     36.30    0.0121     12.08    46.183   1740.82      74.6  0.2958   1.32715  0.0093388     21.34    0.199    0.0238
FS45  HPT.Fl_O               29.13    13.356   1191.89    -62.21    0.0091     48.59    12.381   1168.15     265.4  0.3351   1.36090  0.0093388     28.60    0.267    0.0202
FS49  LPT.Fl_O               29.47     7.037   1035.14   -100.64    0.0090     86.95     6.890   1029.23     860.2  0.1759   1.37109  0.0093388     28.94    0.270    0.0200
FS5   TEGV.Fl_O              29.47     7.037   1035.21   -100.64    0.0090     86.96     6.890   1029.30     860.2  0.1759   1.37108  0.0093388     28.94    0.270    0.0200
FS8   Core_Nozz.Fl_O         29.47     7.037   1035.28   -100.64    0.0090     86.96     6.740   1023.27     613.4  0.2514   1.37108  0.0093388     28.94    0.270    0.0200
FS17  FanDuctLkg.Fl_O       310.27     8.498    517.40     -9.82    0.0000    535.92     7.703    503.07    2606.7  0.3772   1.40017  0.0005787    310.09    0.179    0.0006
FS171 Bleed15.Fl_O           329.75     8.498    519.16    -12.36    0.0000    570.53     7.470    500.38    2481.9  0.4331   1.40008  0.0010918    329.39    0.360    0.0011
FS172 FanDuct.Fl_O           329.75     8.498    519.16    -12.36    0.0000    570.53     7.470    500.38    2481.9  0.4331   1.40008  0.0010918    329.39    0.360    0.0011
FS173 Byp_Nozz.Fl_O          329.75     8.498    519.16    -12.36    0.0000    570.53     6.740    485.89    2006.9  0.5849   1.40008  0.0010918    329.39    0.360    0.0011

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR      eff        Nc        TR   efPoly       pwr       SMN      SMW
Fan       567.51   1.070   0.9047  1834.139    1.0217   0.9056   -1157.2  -1860.24    46.48
LPC        88.28   1.151   0.7179  1834.139    1.0572   0.7235    -474.8      7.04     2.12
HPC        48.24   5.479   0.8075  8767.345    1.7616   0.8464   -4118.0     62.59    58.56
HPT        12.08   3.663   0.8782   214.285    1.3257   0.8586    4118.1
LPT        48.59   1.898   0.8184    52.495    1.1481   0.8047    1632.0

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan        659.38   1.069   0.9065  1816.650    0.0438      0.8607    1.0235    0.9980    0.9905
LPC         46.59   1.243   0.7553     0.484    0.0000      1.8950    0.6217    0.9505    0.0003
HPC         43.88   5.268   0.8159  8533.614   10.9802      1.0995    1.0494    0.9898    0.9733
HPT          0.96   3.589   0.8782     1.288    3.5895     12.6299    0.9723    1.0000    0.0003
LPT          0.74   1.675   0.8244     0.591    1.6754     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2596.98	5886.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1759	860.21
FanDuct	0.0000	0.4331	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.4284	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9004.6	2402.0	4118.1
LP_Shaft	1812.3	4729.6	1632.0

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0750	757.14	-1.66	13.356
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3418	757.14	-1.66	7.037
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	736.25	-6.77	18.147
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	865.13	24.89	34.522
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	736.25	-6.77	18.147
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	963.81	49.39	50.079
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	736.25	-6.77	18.147

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	19.4753	547.12	-52.71	9.140
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.3355	963.81	49.39	48.925
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.9187	963.81	49.39	28.579
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	963.81	49.39	50.079
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	963.81	49.39	50.079
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	963.81	49.39	50.079
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	517.40	-9.82	8.498
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	517.40	-9.82	8.498
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	517.40	-9.82	8.498
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	517.40	-9.82	8.498

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1765.76	0.9995	0.0230	0.25928	0.01215

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.044	0.9801	1.0000	0.9800	613.40	0.251	383.5	351.3
Byp_Nozz	1.261	0.9800	1.0000	0.9800	2006.86	0.585	619.7	6351.3

Appendix L: Compressor code analysis for the descent conditions

5µm, 2 g/m^3, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 10% 39000 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.473   EfDer =  0.954    SH =  0.606659E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     26.560    2415.987       4.265     457.731       1.000       1.000       0.980
  W Kg/sec =  12.073  Wdry =  26.543  WH2O = 0.016  lbm/sec   H2O =   0.241g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     86.001    2571.835       1.381       0.249      53.368      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64409.922   20835.012       3.302     831.557     251.814     619.754       2.461

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   185.90    -0.06   185.90     0.18     0.46   463.00
 MEAN    17.06     0.00    -0.02   185.90    -0.06   185.90     0.18     0.39
 HUB     12.51     0.00    -0.02   185.90    -0.06   185.90     0.18     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.86    50.47    16.39   434.95   473.07     4.17   454.96   450.39    23.17
 MEAN    62.67    47.20    15.47   359.69   404.94     4.17   454.96   450.39    23.17
 HUB     54.83    38.62    16.21   263.75   322.73     4.17   454.96   450.39    23.17

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   389.83   300.15   248.76  1051.70     0.37     7.29     6.52    16.04
 MEAN    18.04   394.43   303.39   252.05  1048.62     0.38     7.43     6.80    12.53
 HUB     15.00   427.13   341.46   256.60  1044.83     0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    434.95   282.94   134.80     0.27  6193.36     0.92     0.87
 MEAN   380.26   263.51    76.87     0.25  5473.03     0.92     0.87     0.87     1.76
 HUB    316.25   257.84    25.21     0.25  5122.66     0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.92     1.15     4.48   478.70     1.05   466.50   466.12    21.36
 MEAN     4.84     1.13     4.39   476.27     1.04   463.77   464.73    23.74
 HUB      4.80     1.13     4.28   475.08     1.04   460.43   464.37    27.04

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.35    28.45    24.20     4.25     0.93     0.58     1.80
 MEAN    50.28    16.96    12.70     4.26     0.95     0.52     2.22
 HUB     53.08    -5.61    -9.30     3.69     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.954       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   405.9388   302.7999   270.3674  1048.2174     0.3873    -0.0359     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.8463     4.3761   463.4603   465.2511    25.0193    48.2386    35.4000   -12.8386

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   268.2721    65.6275   260.1210  1056.5876     0.2539     0.5158     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.8343     4.6251   470.9082   464.3790   554.9116     0.0358     0.6085
```

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
18.0829	267.1900	0.0000	267.1900	1056.6049	0.2529	0.4854	1.3089

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.6043	470.9562	465.0048	0.0000	0.0600	0.0862	0.4712

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8149	4.8108	1.1281	476.6820	18.9521	167.8481	1.3011

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
118107.352	0.624	177.268	278605.438	0.118527E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =15.034 EfDer = 0.958 SH = 0.183952E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.560	2415.987	4.811	476.681	1.000	1.000	0.980

W Kg/sec = 12.073 Wdry = 26.511 WH2O = 0.049 lbm/sec H2O = 0.782g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
77.800	2520.220	1.379	0.250	53.408	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60140.781	20824.904	2.590	590.487	227.969	468.502	2.055

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	244.43	-0.08	244.43	0.23	0.47	451.94
MEAN	18.08	0.00	-0.02	244.43	-0.08	244.43	0.23	0.43	
HUB	15.21	0.00	-0.02	244.43	-0.08	244.43	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.58	46.36	14.22	433.27	497.53	4.64	471.90	467.00	35.74
MEAN	57.33	42.30	15.03	381.15	452.86	4.64	471.90	467.00	35.74
HUB	52.69	37.84	14.85	320.68	403.28	4.64	471.90	467.00	35.74

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	358.57	249.73	257.30	1070.57	0.33	2.33	2.04	9.02
MEAN	18.01	358.12	246.37	259.91	1068.12	0.34	2.40	2.13	7.35
HUB	15.22	379.48	273.74	262.82	1065.71	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	430.52	314.47	180.79	0.29	5101.26	0.92	0.88		
MEAN	379.71	292.12	133.34	0.27	4438.62	0.92	0.88	0.88	1.71
HUB	320.95	267.03	47.22	0.25	4168.39	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.39	1.12	4.99	493.89	1.04	483.60	477.81	24.72
MEAN	5.31	1.10	4.92	491.65	1.03	481.39	476.67	26.74
HUB	5.28	1.10	4.84	490.74	1.03	479.22	476.50	28.87

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	44.14	35.09	31.50	3.59	0.93	0.55	1.40
MEAN	43.47	27.16	23.50	3.66	0.95	0.52	1.63
HUB	46.17	10.18	6.50	3.68	0.95	0.51	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.958	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	382.9458	247.0606	292.5894	1066.9365	0.3589	-0.1068	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3217	4.8746	480.3694	477.2952	27.9882	40.1775	30.6000	-9.5775

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	283.0020	59.9984	276.5688	1072.8234	0.2638	0.3692	2.4513

```
   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3154     5.0680   485.6915   476.2392   491.5697     0.0254     0.4653

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.8235   293.3608     0.0000   293.3608  1072.2755     0.2736     0.3568     0.5911

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.0341   485.2152   476.6186     0.0000     0.0600     0.0660     0.2864

    STAGE EXIT CONDITIONS, STAGE            2
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8318     5.2988     1.1014   492.0951    15.4144   188.8754     1.4642

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  96396.734       0.520     144.683  253040.859   0.212478E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   3
  BLEED =  0.000   DPInc =13.047   EfDer =  0.973    SH =  0.252869E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.560    2415.987       5.299     492.095       1.000       1.000       0.980
 W Kg/sec =  12.073  Wdry =  26.492  WH2O = 0.067  lbm/sec   H2O =   1.147g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     71.767    2480.437       1.378       0.250      53.430      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  56388.152   20819.234       2.593     545.479     210.393     424.468       2.018

ROTOR LEADING EDGE CONDITIONS, STAGE   3

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.07     0.00    -0.02   248.09    -0.09   248.09     0.23     0.46   434.42
 MEAN    17.74     0.00    -0.02   248.09    -0.09   248.09     0.23     0.42
 HUB     15.05     0.00    -0.02   248.09    -0.09   248.09     0.23     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     59.62    46.36    13.26   423.15   490.58     5.11   487.18   477.31    28.18
 MEAN    56.45    43.40    13.05   373.99   448.86     5.11   487.18   477.31    28.18
 HUB     51.99    38.84    13.15   317.31   402.85     5.11   487.18   477.31    28.18

ROTOR EXIT CONDITIONS, STAGE   3    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     19.81   350.44   233.75   261.10  1086.09      0.32     2.26     1.98     8.75
 MEAN    17.51   352.00   233.50   263.40  1084.00      0.32     2.34     2.07     6.78
 HUB     14.85   375.32   264.83   265.95  1081.95      0.35     2.38     2.20     4.28

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    417.66   319.37   183.92     0.29  4632.25      0.92     0.89
 MEAN   369.10   296.26   135.60     0.27  4089.31      0.92     0.89     0.89     1.66
 HUB    313.09   270.29    48.26     0.25  3934.03      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.86     1.11     5.46   507.68     1.03   497.88   486.39    20.89
 MEAN     5.80     1.09     5.39   505.86     1.03   495.97   485.57    22.25
 HUB      5.78     1.09     5.32   505.33     1.03   494.09   485.66    23.65

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     41.84    35.16    31.50     3.66     0.93     0.52     1.40
 MEAN    41.56    27.24    23.50     3.74     0.94     0.50     1.62
 HUB     44.88    10.28     6.50     3.78     0.94     0.50     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.973       0.550      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.3924   377.9918   235.0329   296.0361  1082.7866     0.3491    -0.1148     2.2836

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8080    5.3453   494.8949   486.2103    23.2779    38.4472    31.5000    -6.9472
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
 RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
 17.3924   291.2300    63.5299   284.2162  1087.8354     0.2677     0.3185     2.3726

 BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
  0.9500     5.8039     5.5261   499.5269   485.2468   451.3937     0.0197     0.4401

  VANED DIFFUSER EXIT:
 R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
 17.1214   296.1781     0.0000   296.1781  1087.5675     0.2723     0.3422     0.5709

 Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
  0.9500     5.5036   499.2961   485.6118     0.0000     0.0600     0.0526     0.2649

  STAGE EXIT CONDITIONS, STAGE             3
  Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
  0.8527     5.7901     1.0927   506.2917    14.1976   194.1708     1.5052

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  89002.281       0.510     133.584  251496.797   0.291614E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =11.460   EfDer =  0.984    SH =  0.345483E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.560    2415.987       5.790     506.291       1.000       1.000       0.980
 W Kg/sec =  12.073  Wdry =  26.468  WH2O = 0.092  lbm/sec   H2O =   1.665g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     66.619    2445.414       1.377       0.251      53.460      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  53084.563   20811.600       2.627     513.330     195.414     395.845       2.026

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   248.18    -0.09   248.18     0.23     0.44   411.00
 MEAN    16.97     0.00    -0.02   248.18    -0.09   248.18     0.23     0.40
 HUB     14.32     0.00    -0.02   248.18    -0.09   248.18     0.23     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.57    46.36    12.21   406.07   475.98     5.59   501.39   486.38    23.89
 MEAN    55.26    43.80    11.46   357.80   435.52     5.59   501.39   486.38    23.89
 HUB     50.59    37.84    12.75   301.92   390.89     5.59   501.39   486.38    23.89

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     18.88   337.28   214.34   260.41  1099.93      0.31     2.16     1.89     8.34
 MEAN    16.57   338.78   214.17   262.49  1098.05      0.31     2.24     1.97     6.35
 HUB     13.89   360.65   244.89   264.76  1096.20      0.33     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    398.06   318.70   183.72     0.29  4048.39      0.92     0.90
 MEAN   349.43   295.30   135.26     0.27  3551.11      0.92     0.90     0.90     1.62
 HUB    292.85   269.07    47.96     0.25  3402.69      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.32     1.09     5.92   519.88     1.03   510.82   493.85    18.85
 MEAN     6.25     1.08     5.86   518.21     1.02   509.07   493.17    19.89
 HUB      6.23     1.08     5.79   517.71     1.02   507.36   493.27    20.96

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.46    35.20    31.50     3.70     0.93     0.49     1.40
 MEAN    39.21    27.26    23.50     3.76     0.94     0.47     1.62
 HUB     42.77    10.27     6.50     3.77     0.94     0.47     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.984       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   359.5267   215.3763   287.8758  1097.1886     0.3277    -0.0909     2.1803
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Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.2623	5.8205	508.3182	493.7100	20.5602	36.8023	32.4000	-4.4023

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	289.0038	64.8151	281.6419	1101.0990	0.2625	0.2815	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.2602	5.9721	511.9560	492.9276	432.2457	0.0152	0.4185

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	286.7267	0.0000	286.7267	1101.1975	0.2604	0.3285	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.9656	512.0614	493.2445	0.0000	0.0600	0.0432	0.2657

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8666	6.2487	1.0792	518.5973	12.3066	209.2354	1.6220

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
77383.781	0.488	116.146	257395.641	0.395095E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =10.000 EfDer = 0.991 SH = 0.464951E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.560	2415.987	6.249	518.597	1.000	1.000	0.980

W Kg/sec = 12.073 Wdry = 26.436 WH2O = 0.123 lbm/sec H2O = 2.366g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.475	2416.227	1.375	0.252	53.499	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50274.684	20801.719	2.779	509.668	183.393	384.739	2.098

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	236.73	-0.08	236.73	0.21	0.41	386.28
MEAN	15.91	0.00	-0.02	236.73	-0.08	236.73	0.21	0.37	
HUB	13.07	0.00	-0.02	236.73	-0.08	236.73	0.21	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.50	47.36	11.14	386.25	453.09	6.05	514.15	494.11	21.57
MEAN	54.80	44.80	10.00	335.50	410.68	6.05	514.15	494.11	21.57
HUB	49.34	38.84	10.50	275.56	363.34	6.05	514.15	494.11	21.57

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	320.25	201.41	248.98	1112.27	0.29	2.05	1.78	7.43
MEAN	15.50	318.91	196.72	251.01	1110.33	0.29	2.13	1.86	5.75
HUB	12.59	335.08	219.52	253.17	1108.42	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	378.24	305.38	176.82	0.27	3614.85	0.92	0.91		
MEAN	326.74	282.68	130.02	0.25	3049.99	0.92	0.91	0.91	1.61
HUB	265.44	257.30	45.92	0.23	2764.77	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.75	1.08	6.38	530.68	1.02	522.55	500.46	17.72
MEAN	6.67	1.07	6.30	528.79	1.02	520.73	499.70	18.67
HUB	6.63	1.06	6.23	527.84	1.02	518.94	499.56	19.67

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.97	35.38	31.50	3.88	0.93	0.48	1.40
MEAN	38.09	27.38	23.50	3.88	0.94	0.46	1.64
HUB	40.93	10.28	6.50	3.78	0.94	0.44	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.991	0.495	73.000

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 ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
  R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
 15.2185   348.9193   200.3273   285.6810  1108.9277     0.3146    -0.1705     2.0437

  Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
  6.6725     6.2373   519.4558   500.3346    19.5371    35.0392    33.0000    -2.0392

  STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
 RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
 15.2185   291.8725    66.6493   284.1609  1112.0034     0.2625     0.1641     2.1315

 BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
  0.9500     6.6703     6.3634   522.3494   499.6414   410.5396     0.0256     0.3940

  VANED DIFFUSER EXIT:
 R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
 14.7013   283.9220     0.0000   283.9220  1112.3629     0.2552     0.3174     0.5109

 Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
  0.9500     6.3754   522.6993   499.8043     0.0000     0.0600     0.0380     0.1958

  STAGE EXIT CONDITIONS, STAGE             5
  Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
  0.8784     6.6656     1.0667   529.0839    10.5072   228.6056     1.7721

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  66317.984       0.464      99.537  270028.719   0.515160E-02

Melt Ratio at Stator LE, Throat, TE
0.10474E+00 0.14799E+00 0.30129E+00
 trTOT =     1.1559   Tt4 =   529.0839   T1  =   457.7312

   OVERALL EXIT CONDITIONS; ALL          5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    447208.13    671.2178     86.0007      1.5630      0.8352     15.4729     1.1559     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 38334 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.521   EfDer =  0.954    SH =  0.525093E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.637    2339.179       4.199     451.558       1.000       1.000       0.980
  W Kg/sec =  11.653  Wdry =  25.624  WH2O = 0.013  lbm/sec   H2O =   0.208g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.737    2507.039       1.381       0.249      53.365      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  62233.523   20112.225       3.392     831.557     245.171     619.754       2.528

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   179.62    -0.06   179.62     0.17     0.44   451.33
 MEAN    17.06     0.00    -0.02   179.62    -0.06   179.62     0.17     0.38
 HUB     12.51     0.00    -0.02   179.62    -0.06   179.62     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.90    50.47    16.43   421.12   457.89      4.11   448.97   445.81    26.48
 MEAN    62.72    47.20    15.52   348.25   391.90      4.11   448.97   445.81    26.48
 HUB     54.89    38.62    16.27   255.37   312.26      4.11   448.97   445.81    26.48

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   377.49   290.60   240.94  1044.12      0.36     7.29     6.52    16.04
 MEAN    18.04   381.88   293.80   243.96  1041.22      0.37     7.43     6.80    12.53
 HUB     15.00   413.35   330.60   248.13  1037.65      0.40     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    421.12   274.02   130.53     0.26  5996.31      0.92     0.87
 MEAN   368.17   255.04    74.37     0.24  5300.10      0.92     0.87     0.87     1.76
 HUB    306.20   249.32    24.40     0.24  4959.74      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.81     1.14     4.40   471.23     1.04   459.78   461.16    24.18
 MEAN     4.73     1.13     4.32   468.94     1.04   457.23   459.76    26.79
 HUB      4.70     1.12     4.22   467.83     1.04   454.10   459.36    30.39

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.34    28.45    24.20     4.25     0.93     0.58     1.80
 MEAN    50.30    16.95    12.70     4.25     0.95     0.52     2.22
 HUB     53.11    -5.62    -9.30     3.68     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.954       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   392.9876   293.2325   261.6371  1040.8489     0.3776    -0.0360     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.7420     4.3032   456.9316   460.2479    28.1568    48.2590    35.4000   -12.8590

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   260.1176    63.6327   252.2143  1048.7365     0.2480     0.5156     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.7312     4.5356   463.8984   459.4772   554.9116     0.0349     0.6076

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   259.0318     0.0000   259.0318  1048.7528     0.2470     0.4843     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.5158   463.9449   460.0240     0.0000     0.0600     0.0863     0.4701
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8146     4.7088     1.1213   469.3294    17.7728   167.6924     1.2999

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 110701.625       0.624     160.384  271492.875   0.989312E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.997   EfDer =  0.958    SH =  0.150855E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.637    2339.179       4.709     469.329       1.000       1.000       0.980
 W Kg/sec =  11.653  Wdry =  25.599  WH2O = 0.039  lbm/sec   H2O =   0.639g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.131    2459.137       1.380       0.249      53.397      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58312.637   20104.445       2.648     590.487     223.031     468.502       2.101

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   237.00    -0.08   237.00     0.23     0.46   440.99
 MEAN   18.08     0.00    -0.02   237.00    -0.08   237.00     0.23     0.42
 HUB    15.21     0.00    -0.02   237.00    -0.08   237.00     0.23     0.37

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    60.54    46.36    14.18   419.49   481.88     4.55   464.83   461.75    39.52
 MEAN   57.30    42.30    15.00   369.03   438.65     4.55   464.83   461.75    39.52
 HUB    52.65    37.84    14.81   310.48   390.67     4.55   464.83   461.75    39.52

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP    20.42   347.44   241.15   250.12  1061.94      0.33     2.33     2.04     9.02
 MEAN   18.01   347.10   238.15   252.52  1059.64      0.33     2.40     2.13     7.35
 HUB    15.22   367.87   264.96   255.19  1057.37      0.35     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   416.84   305.65   175.68     0.29  4926.04      0.92     0.88
 MEAN  367.64   283.78   129.49     0.27  4290.52      0.92     0.88     0.88     1.70
 HUB   310.75   259.27    45.79     0.25  4034.75      0.92     0.88

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     5.24     1.11     4.87   485.44     1.03   475.77   472.43    27.61
 MEAN    5.17     1.10     4.81   483.36     1.03   473.71   471.29    29.79
 HUB     5.14     1.09     4.74   482.52     1.03   471.68   471.09    32.10

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    43.95    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN   43.32    27.15    23.50     3.65     0.95     0.52     1.63
 HUB    46.08    10.17     6.50     3.67     0.95     0.51     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.958       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   371.2020   238.8170   284.1784  1058.5104     0.3507    -0.1074     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   5.1836     4.7667   472.7407   471.8717    31.1569    40.0429    30.6000    -9.4429

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   275.2576    58.3566   269.0005  1064.0476     0.2587     0.3661     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     5.1780     4.9459   477.7062   470.9476   491.5697     0.0245     0.4623

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   285.2620     0.0000   285.2620  1063.5250     0.2682     0.3541     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9143	477.2583	471.2844	0.0000	0.0600	0.0653	0.2831

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8325	5.1625	1.0964	483.7713	14.4432	189.2462	1.4670

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
90216.125	0.519	130.704	246803.563	0.173571E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.924 EfDer = 0.974 SH = 0.205751E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.637	2339.179	5.163	483.771	1.000	1.000	0.980

W Kg/sec = 11.653 Wdry = 25.585 WH2O = 0.053 lbm/sec H2O = 0.926g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.500	2422.153	1.379	0.250	53.415	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54851.598	20100.094	2.640	545.479	206.617	424.468	2.054

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	241.33	-0.08	241.33	0.23	0.45	424.21
MEAN	17.74	0.00	-0.02	241.33	-0.08	241.33	0.23	0.41	
HUB	15.05	0.00	-0.02	241.33	-0.08	241.33	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.50	46.36	13.14	409.69	475.56	4.98	479.12	471.89	31.39
MEAN	56.32	43.40	12.92	362.10	435.22	4.98	479.12	471.89	31.39
HUB	51.86	38.84	13.02	307.22	390.74	4.98	479.12	471.89	31.39

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	339.85	225.15	254.57	1076.57	0.32	2.26	1.98	8.75
MEAN	17.51	341.51	225.25	256.69	1074.61	0.32	2.34	2.07	6.78
HUB	14.85	364.31	256.17	259.04	1072.69	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	404.39	311.34	179.24	0.29	4461.79	0.92	0.89		
MEAN	357.36	288.70	132.11	0.27	3944.89	0.92	0.89	0.89	1.65
HUB	303.14	263.26	46.97	0.25	3805.33	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.68	1.10	5.31	498.33	1.03	489.10	480.85	23.47
MEAN	5.62	1.09	5.25	496.64	1.03	487.32	480.04	24.95
HUB	5.61	1.09	5.18	496.19	1.03	485.58	480.11	26.47

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.49	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	41.27	27.23	23.50	3.73	0.94	0.50	1.62
HUB	44.68	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.974	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	366.8695	226.7319	288.4196	1073.4431	0.3418	-0.1157	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6337	5.2024	486.3018	480.6352	26.0924	38.1715	31.5000	-6.6715

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	284.1002	61.9745	277.2581	1078.1783	0.2635	0.3124	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6302	5.3688	490.6068	479.7896	451.3937	0.0188	0.4349

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	288.8762	0.0000	288.8762	1077.9221	0.2680	0.3375	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3479	490.3892	480.1172	0.0000	0.0600	0.0514	0.2591

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8542	5.6175	1.0881	497.0549	13.2845	195.1314	1.5126

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
83145.398	0.508	120.460	245587.328	0.236783E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.255 EfDer = 0.985 SH = 0.279714E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.637	2339.179	5.617	497.054	1.000	1.000	0.980

W Kg/sec = 11.653 Wdry = 25.566 WH2O = 0.072 lbm/sec H2O = 1.334g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.674	2389.568	1.378	0.250	53.439	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51790.215	20094.219	2.666	513.330	192.565	395.845	2.056

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	242.13	-0.08	242.13	0.22	0.43	401.62
MEAN	16.97	0.00	-0.02	242.13	-0.08	242.13	0.22	0.39	
HUB	14.32	0.00	-0.02	242.13	-0.08	242.13	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.38	46.36	12.02	393.16	461.81	5.43	492.38	480.80	26.80
MEAN	55.06	43.80	11.26	346.43	422.72	5.43	492.38	480.80	26.80
HUB	50.37	37.84	12.53	292.32	379.64	5.43	492.38	480.80	26.80

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	327.40	205.85	254.59	1089.61	0.30	2.16	1.89	8.34
MEAN	16.57	329.09	206.17	256.50	1087.85	0.30	2.24	1.97	6.35
HUB	13.89	350.60	236.75	258.59	1086.12	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	385.40	311.53	179.55	0.29	3888.11	0.92	0.90		
MEAN	338.33	288.55	132.16	0.27	3418.43	0.92	0.90	0.90	1.61
HUB	283.54	262.79	46.79	0.24	3289.62	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.10	1.09	5.74	509.71	1.03	501.16	488.14	21.28
MEAN	6.04	1.08	5.68	508.18	1.02	499.55	487.47	22.42
HUB	6.03	1.07	5.61	507.76	1.02	497.96	487.56	23.59

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.96	35.19	31.50	3.69	0.93	0.48	1.40
MEAN	38.79	27.26	23.50	3.76	0.94	0.47	1.62
HUB	42.47	10.26	6.50	3.76	0.94	0.47	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.985	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	349.4142	207.3283	281.2565	1087.0186	0.3214	-0.0920	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.0527	5.6408	498.8231	487.9801	23.1786	36.3958	32.4000	-3.9958

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	282.6620	63.3928	275.4617	1090.6696	0.2592	0.2729	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.0510	5.7791	502.1862	487.2925	432.2457	0.0145	0.4114

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	280.4081	0.0000	280.4081	1090.7667	0.2571	0.3218	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.7733	502.2882	487.5758	0.0000	0.0600	0.0420	0.2577

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8683	6.0405	1.0753	508.5531	11.4991	210.8906	1.6348

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
72149.695	0.486	104.530	251610.672	0.319301E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.724 EfDer = 0.993 SH = 0.374510E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.637	2339.179	6.040	508.553	1.000	1.000	0.980

W Kg/sec = 11.653 Wdry = 25.541 WH2O = 0.096 lbm/sec H2O = 1.881g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
61.778	2362.400	1.377	0.251	53.470	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49174.984	20086.668	2.812	509.668	181.246	384.739	2.123

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	231.55	-0.08	231.55	0.21	0.40	377.67
MEAN	15.91	0.00	-0.02	231.55	-0.08	231.55	0.21	0.37	
HUB	13.07	0.00	-0.02	231.55	-0.08	231.55	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.24	47.36	10.88	373.97	439.92	5.86	504.29	488.34	24.28
MEAN	54.52	44.80	9.72	324.84	398.98	5.86	504.29	488.34	24.28
HUB	49.05	38.84	10.21	266.80	353.33	5.86	504.29	488.34	24.28

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	311.06	192.96	243.98	1101.25	0.28	2.05	1.78	7.43
MEAN	15.50	310.11	189.01	245.85	1099.44	0.28	2.13	1.86	5.75
HUB	12.59	326.18	212.05	247.85	1097.66	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	366.21	299.24	173.26	0.27	3463.12	0.92	0.91		
MEAN	316.36	276.88	127.35	0.25	2930.44	0.92	0.91	0.91	1.59
HUB	257.00	251.89	44.95	0.23	2670.76	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.50	1.08	6.15	519.79	1.02	512.10	494.60	20.16
MEAN	6.42	1.06	6.08	518.06	1.02	510.42	493.86	21.22
HUB	6.39	1.06	6.02	517.22	1.02	508.76	493.72	22.31

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.34	35.38	31.50	3.88	0.93	0.47	1.40
MEAN	37.55	27.38	23.50	3.88	0.94	0.45	1.64
HUB	40.55	10.28	6.50	3.78	0.94	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.993	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	339.5710	192.4738	279.7540	1098.0837	0.3092	-0.1725	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.4294	6.0234	509.1985	494.4615	22.2171	34.5284	33.0000	-1.5284

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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   286.0689    65.3241   278.5107  1100.9413     0.2598     0.1530     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     6.4277     6.1377   511.8587   493.8746   410.5396     0.0248     0.3855

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   278.3039     0.0000   278.3039  1101.3036     0.2527     0.3086     0.5109

Blockage4   Ps4       Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     6.1487   512.2079   494.1189     0.0000     0.0600     0.0374     0.1843

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4       Tt2avg      Del T     Ns          Ns nondim
 0.8779     6.4233     1.0634   518.3599     9.8076   231.0067     1.7907

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  61726.660       0.460      89.429  264194.156   0.422858E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1479   Tt4 =   518.3599   T1  =   451.5578

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    417939.50    605.5077     83.7369      1.5296      0.8363     15.5212      1.1479     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 37357 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.536   EfDer =  0.954    SH =  0.474490E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
      26.247    2309.625       4.337     449.669       1.000       1.000       0.980
  W Kg/sec =  11.931  Wdry =  26.235  WH2O = 0.012  lbm/sec   H2O =   0.195g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
      82.829    2480.558       1.381       0.249      53.364      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
   61407.070   20590.938       3.429     831.557     242.505     619.754       2.556

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   177.23    -0.06   177.23     0.17     0.44   446.56
 MEAN    17.06     0.00    -0.02   177.23    -0.06   177.23     0.17     0.38
 HUB     12.51     0.00    -0.02   177.23    -0.06   177.23     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.92    50.47    16.45   415.80   452.05     4.25   447.14   444.47    27.07
 MEAN    62.74    47.20    15.54   343.85   386.89     4.25   447.14   444.47    27.07
 HUB     54.90    38.62    16.28   252.14   308.25     4.25   447.14   444.47    27.07

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   372.75   286.90   237.97  1041.74      0.36     7.29     6.52    16.04
 MEAN    18.04   377.07   290.10   240.88  1038.91      0.36     7.43     6.80    12.53
 HUB     15.00   408.07   326.41   244.91  1035.43      0.39     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    415.80   270.64   128.91     0.26  5919.97      0.92     0.87
 MEAN   363.52   251.83    73.42     0.24  5233.25      0.92     0.87     0.87     1.76
 HUB    302.33   246.09    24.08     0.24  4896.89      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.95     1.14     4.54   468.84     1.04   457.68   459.66    24.72
 MEAN     4.88     1.12     4.46   466.62     1.04   455.19   458.26    27.35
 HUB      4.84     1.12     4.36   465.53     1.04   452.15   457.82    30.96

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.33    28.44    24.20     4.24     0.93     0.58     1.80
 MEAN    50.30    16.95    12.70     4.25     0.95     0.52     2.22
 HUB     53.12    -5.62    -9.30     3.68     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.954       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   388.0211   289.5343   258.3220  1038.5487     0.3736    -0.0361     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.8854     4.4421   454.9065   458.7192    28.7176    48.2607    35.4000   -12.8607

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   257.0236    62.8758   249.2143  1046.2495     0.2457     0.5154     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.8746     4.6767   461.6917   458.0149   554.9116     0.0346     0.6072

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   255.9350     0.0000   255.9350  1046.2672     0.2446     0.4838     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.6566   461.7376   458.5148     0.0000     0.0600     0.0863     0.4695
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8145     4.8518     1.1187   466.9955    17.3281   167.6538     1.2996

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 107908.008       0.624     160.054  278742.094   0.884372E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.977   EfDer =  0.959    SH =  0.134262E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.247    2309.625       4.852     466.995       1.000       1.000       0.980
 W Kg/sec =  11.931  Wdry =  26.212  WH2O = 0.035  lbm/sec   H2O =   0.589g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.456    2434.127       1.380       0.249      53.392      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57618.277   20583.910       2.671     590.487     221.032     468.502       2.120

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   234.18    -0.08   234.18     0.22     0.45   436.51
 MEAN   18.08     0.00    -0.02   234.18    -0.08   234.18     0.22     0.41
 HUB    15.21     0.00    -0.02   234.18    -0.08   234.18     0.22     0.37

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    60.52    46.36    14.16   414.19   475.88     4.69   462.60   460.09    40.18
 MEAN   57.28    42.30    14.98   364.37   433.20     4.69   462.60   460.09    40.18
 HUB    52.63    37.84    14.79   306.56   385.84     4.69   462.60   460.09    40.18

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   343.17   237.84   247.39  1059.16     0.32     2.33     2.04     9.02
 MEAN   18.01   342.86   234.94   249.71  1056.91     0.32     2.40     2.13     7.35
 HUB    15.22   363.42   261.57   252.30  1054.70     0.34     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   411.57   302.30   173.74     0.29  4858.25     0.92     0.88
 MEAN  363.00   280.63   128.05     0.27  4232.78     0.92     0.88     0.88     1.70
 HUB   306.82   256.32    45.25     0.24  3983.10     0.92     0.88

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     5.39     1.11     5.02   482.69     1.03   473.25   470.77    28.23
 MEAN    5.32     1.10     4.95   480.67     1.03   471.25   469.62    30.42
 HUB     5.29     1.09     4.88   479.86     1.03   469.28   469.39    32.74

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    43.87    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN   43.25    27.15    23.50     3.65     0.95     0.52     1.63
 HUB    46.03    10.17     6.50     3.67     0.95     0.51     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.959       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   366.6893   235.6029  280.9845  1055.8052     0.3473    -0.1076     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   5.3305     4.9095   470.3016  470.1701    31.8046    39.9795    30.6000    -9.3795

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   272.3209    57.7340   266.1305  1061.2063     0.2566     0.3647     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     5.3251     5.0900   475.1318   469.3230   491.5697     0.0241     0.4609

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   282.1897     0.0000   282.1897  1060.6942     0.2660     0.3528     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0580	474.6944	469.6338	0.0000	0.0600	0.0649	0.2816

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8328	5.3094	1.0943	481.0714	14.0771	189.4269	1.4684

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
87882.336	0.519	130.351	253485.516	0.154306E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.870 EfDer = 0.975 SH = 0.182724E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.247	2309.625	5.309	481.071	1.000	1.000	0.980

W Kg/sec = 11.931 Wdry = 26.199 WH2O = 0.048 lbm/sec H2O = 0.851g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.984	2398.252	1.379	0.250	53.408	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54268.566	20579.979	2.660	545.479	205.077	424.468	2.070

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	238.77	-0.08	238.77	0.22	0.44	420.03
MEAN	17.74	0.00	-0.02	238.77	-0.08	238.77	0.22	0.40	
HUB	15.05	0.00	-0.02	238.77	-0.08	238.77	0.22	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.45	46.36	13.09	404.52	469.80	5.13	476.51	470.20	32.09
MEAN	56.27	43.40	12.87	357.52	429.99	5.13	476.51	470.20	32.09
HUB	51.80	38.84	12.96	303.34	386.10	5.13	476.51	470.20	32.09

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	335.77	221.78	252.10	1073.44	0.31	2.26	1.98	8.75
MEAN	17.51	337.51	222.08	254.15	1071.53	0.31	2.34	2.07	6.78
HUB	14.85	360.09	252.82	256.42	1069.66	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	399.28	308.32	177.50	0.29	4395.04	0.92	0.89		
MEAN	352.85	285.82	130.77	0.27	3889.33	0.92	0.89	0.89	1.65
HUB	299.31	260.60	46.49	0.24	3755.56	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.83	1.10	5.46	495.24	1.03	486.22	479.14	24.10
MEAN	5.77	1.09	5.39	493.61	1.03	484.50	478.32	25.59
HUB	5.76	1.08	5.33	493.18	1.03	482.81	478.37	27.13

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.34	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	41.15	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.59	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.975	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	362.6283	223.5383	285.5345	1070.3843	0.3388	-0.1163	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7836	5.3481	483.4976	478.8947	26.7633	38.0566	31.5000	-6.5566

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	281.4019	61.3859	274.6248	1074.9990	0.2618	0.3098	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7803	5.5152	487.6805	478.1164	451.3937	0.0185	0.4327

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	286.1122	0.0000	286.1122	1074.7474	0.2662	0.3355	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4942	487.4676	478.4207	0.0000	0.0600	0.0510	0.2566

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8548	5.7675	1.0863	494.0114	12.9409	195.5527	1.5159

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
80934.438	0.508	120.046	252355.641	0.210134E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.169 EfDer = 0.985 SH = 0.248032E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.247	2309.625	5.767	494.011	1.000	1.000	0.980

W Kg/sec = 11.931 Wdry = 26.182 WH2O = 0.065 lbm/sec H2O = 1.222g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.287	2366.634	1.378	0.250	53.429	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51300.188	20574.670	2.682	513.330	191.391	395.845	2.068

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	239.84	-0.08	239.84	0.22	0.42	397.76
MEAN	16.97	0.00	-0.02	239.84	-0.08	239.84	0.22	0.39	
HUB	14.32	0.00	-0.02	239.84	-0.08	239.84	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.30	46.36	11.94	388.19	456.38	5.57	489.42	479.06	27.51
MEAN	54.97	43.80	11.17	342.05	417.82	5.57	489.42	479.06	27.51
HUB	50.28	37.84	12.44	288.62	375.33	5.57	489.42	479.06	27.51

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	323.61	202.55	252.39	1086.17	0.30	2.16	1.89	8.34
MEAN	16.57	325.40	203.10	254.24	1084.46	0.30	2.24	1.97	6.35
HUB	13.89	346.74	233.57	256.26	1082.78	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	380.53	308.83	177.98	0.28	3825.69	0.92	0.90		
MEAN	334.05	285.98	130.96	0.26	3367.48	0.92	0.90	0.90	1.60
HUB	279.96	260.42	46.38	0.24	3245.52	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.25	1.08	5.89	506.32	1.02	497.96	486.38	21.93
MEAN	6.19	1.07	5.82	504.85	1.02	496.39	485.70	23.08
HUB	6.18	1.07	5.76	504.45	1.02	494.86	485.78	24.26

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.75	35.19	31.50	3.69	0.93	0.48	1.40
MEAN	38.62	27.25	23.50	3.75	0.94	0.46	1.62
HUB	42.35	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.985	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	345.5694	204.2378	278.7564	1083.6422	0.3189	-0.0926	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.2048	5.7888	495.6795	486.1928	23.8648	36.2293	32.4000	-3.8293

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	280.2689	62.8561	273.1296	1087.1938	0.2578	0.2692	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2032     5.9273   498.9402   485.5586   432.2457     0.0142     0.4086

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   278.0236     0.0000   278.0236  1087.2904     0.2557     0.3190     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9215   499.0410   485.8219     0.0000     0.0600     0.0416     0.2543

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8690     6.1927     1.0737   505.2062    11.1957   211.5966     1.6403

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  70175.383       0.485     104.087  258652.172   0.282959E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.609   EfDer =  0.993    SH =  0.331577E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.247    2309.625       6.193     505.206       1.000       1.000       0.980
 W Kg/sec =  11.931  Wdry =  26.160  WH2O = 0.087  lbm/sec   H2O =   1.719g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     61.489    2340.266       1.377       0.251      53.456      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  48759.922   20567.867       2.826     509.668     180.353     384.739       2.133

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   229.60    -0.08   229.60     0.21     0.40   374.13
 MEAN   15.91     0.00    -0.02   229.60    -0.08   229.60     0.21     0.36
 HUB    13.07     0.00    -0.02   229.60    -0.08   229.60     0.21     0.32

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    58.13    47.36    10.77   369.24   434.87     6.01   501.01   486.53    25.01
 MEAN   54.41    44.80     9.61   320.73   394.51     6.01   501.01   486.53    25.01
 HUB    48.93    38.84    10.09   263.43   349.50     6.01   501.01   486.53    25.01

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   307.55   189.67   242.10  1097.55     0.28     2.05     1.78     7.43
 MEAN   15.50   306.75   186.02   243.91  1095.79     0.28     2.13     1.86     5.75
 HUB    12.59   322.81   209.20   245.84  1094.05     0.30     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   361.59   296.93   171.92     0.27  3404.06     0.92     0.91
 MEAN  312.36   274.69   126.34     0.25  2884.15     0.92     0.91     0.91     1.59
 HUB   253.75   249.85    44.56     0.23  2634.85     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.65     1.07     6.30   516.13     1.02   508.60   492.77    20.81
 MEAN    6.58     1.06     6.23   514.46     1.02   506.97   492.02    21.89
 HUB     6.54     1.06     6.17   513.66     1.02   505.37   491.87    23.00

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    38.08    35.38    31.50     3.88     0.93     0.47     1.40
 MEAN   37.33    27.38    23.50     3.88     0.94     0.45     1.64
 HUB    40.40    10.27     6.50     3.77     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   336.0084   189.4326   277.5192  1094.4509     0.3070    -0.1734     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.5828     6.1728   505.7682   492.5963    22.9252    34.3172    33.0000    -1.3172
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   283.8880    64.8261   276.3874  1097.2225     0.2587     0.1481     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.5812     6.2866   508.3392   492.0547   410.5396     0.0245     0.3820

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   276.1844     0.0000   276.1844  1097.5820     0.2516     0.3050     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.2978   508.6833   492.2807     0.0000     0.0600     0.0372     0.1796

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8784     6.5767     1.0620   514.7505     9.5450   232.0312     1.7987

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  59992.230       0.459      88.983  271682.719   0.374084E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1447   Tt4 =   514.7505   T1  =   449.6686

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    406892.38    603.5221     82.8288      1.5163      0.8368     15.5364      1.1447     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 34381 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.576   EfDer =  0.954    SH =  0.469029E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     28.226    2242.253       4.829     451.603       1.000       1.000       0.980
  W Kg/sec =  12.830  Wdry =  28.213  WH2O = 0.013  lbm/sec   H2O =   0.214g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.180    2403.042       1.381       0.249      53.364      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59513.656   22143.674       3.542     831.557     234.752     619.754       2.640

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   171.77    -0.06   171.77     0.17     0.43   432.61
 MEAN    17.06     0.00    -0.02   171.77    -0.06   171.77     0.17     0.36
 HUB     12.51     0.00    -0.02   171.77    -0.06   171.77     0.17     0.29

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.95    50.47    16.48   403.67   438.75     4.74   449.23   446.42    26.89
 MEAN    62.78    47.20    15.58   333.82   375.47     4.74   449.23   446.42    26.89
 HUB     54.95    38.62    16.33   244.79   299.09     4.74   449.23   446.42    26.89

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   361.97   278.46   231.27  1043.38      0.35     7.29     6.52    16.04
 MEAN    18.04   366.12   281.64   233.92  1040.73      0.35     7.43     6.80    12.53
 HUB     15.00   396.02   316.85   237.57  1037.46      0.38     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    403.67   262.99   125.22     0.25  5745.78      0.92     0.87
 MEAN   352.92   244.53    71.27     0.23  5080.76      0.92     0.87     0.87     1.76
 HUB    293.51   238.71    23.34     0.23  4753.47      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.47     1.13     5.04   469.67     1.04   459.14   460.84    24.89
 MEAN     5.39     1.12     4.95   467.58     1.04   456.81   459.49    27.34
 HUB      5.35     1.11     4.85   466.55     1.03   453.95   459.06    30.69

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.29    28.43    24.20     4.23     0.93     0.58     1.80
 MEAN    50.29    16.95    12.70     4.25     0.95     0.52     2.22
 HUB     53.14    -5.61    -9.30     3.69     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.954       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   376.7225   281.0977   250.8065  1040.3842     0.3621    -0.0363     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3996     4.9378   456.5353   459.9243    28.6589    48.2594    35.4000   -12.8594

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   250.1091    61.1843   242.5099  1047.6058     0.2387     0.5148     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3889     5.1820   462.9077   459.2938   554.9116     0.0335     0.6058

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   249.0055     0.0000   249.0055  1047.6262     0.2377     0.4824     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.1606   462.9528   459.7516     0.0000     0.0600     0.0863     0.4680
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8142     5.3647     1.1110   467.9297    16.3282   167.5300     1.2987

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 101688.375       0.624     162.202  298492.000   0.848283E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.914   EfDer =  0.959    SH =  0.126947E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     28.226    2242.253       5.365     467.929       1.000       1.000       0.980
 W Kg/sec =  12.830  Wdry =  28.190  WH2O = 0.036  lbm/sec   H2O =   0.615g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.462    2360.764       1.380       0.249      53.389      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  56072.465   22136.705       2.744     590.487     215.186     468.502       2.177

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   227.90    -0.08   227.90     0.22     0.44   423.35
 MEAN    18.08     0.00    -0.02   227.90    -0.08   227.90     0.22     0.40
 HUB     15.21     0.00    -0.02   227.90    -0.08   227.90     0.22     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.46    46.36    14.10   402.11   462.27     5.19   463.77   461.22    39.88
 MEAN    57.21    42.30    14.91   353.74   420.86     5.19   463.77   461.22    39.88
 HUB     52.56    37.84    14.72   297.62   374.91     5.19   463.77   461.22    39.88

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950       77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   333.51   230.07   241.45  1059.71      0.31     2.33     2.04     9.02
 MEAN    18.01   333.34   227.57   243.57  1057.61      0.32     2.40     2.13     7.35
 HUB     15.22   353.37   253.76   245.92  1055.55      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    399.57   295.01   169.50     0.28  4699.58      0.92     0.88
 MEAN   352.41   273.70   124.84     0.26  4099.92      0.92     0.88     0.88     1.69
 HUB    297.87   249.85    44.12     0.24  3864.12      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.92     1.10     5.54   482.67     1.03   473.75   471.41    28.74
 MEAN     5.85     1.09     5.47   480.79     1.03   471.88   470.31    30.81
 HUB      5.82     1.09     5.39   480.05     1.03   470.04   470.09    32.99

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.62    35.07    31.50     3.57     0.93     0.54     1.40
 MEAN    43.06    27.14    23.50     3.64     0.95     0.52     1.63
 HUB     45.90    10.17     6.50     3.67     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.959       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   356.5721   228.2076   273.9798  1056.5616     0.3375    -0.1084     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8606     5.4223   470.9820   470.8289    32.1452    39.7921    30.6000    -9.1921

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   265.9677    56.3870   259.9218  1061.6117     0.2505     0.3604     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8553     5.6086   475.5006   470.0739   491.5697     0.0231     0.4568

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   275.5255     0.0000   275.5255  1061.1287     0.2597     0.3492     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5753	475.0867	470.3568	0.0000	0.0600	0.0639	0.2772

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8337	5.8390	1.0884	481.1671	13.2386	189.9893	1.4728

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
82636.063	0.518	131.812	271802.719	0.145060E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.706 EfDer = 0.976 SH = 0.170557E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
28.226	2242.253	5.839	481.167	1.000	1.000	0.980

W Kg/sec = 12.830 Wdry = 28.178 WH2O = 0.048 lbm/sec H2O = 0.875g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.442	2328.064	1.379	0.250	53.404	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53012.156	22132.902	2.720	545.479	200.544	424.468	2.117

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	233.24	-0.08	233.24	0.22	0.43	407.73
MEAN	17.74	0.00	-0.02	233.24	-0.08	233.24	0.22	0.39	
HUB	15.05	0.00	-0.02	233.24	-0.08	233.24	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.30	46.36	12.94	392.72	456.83	5.65	476.81	470.88	32.56
MEAN	56.11	43.40	12.71	347.10	418.25	5.65	476.81	470.88	32.56
HUB	51.63	38.84	12.79	294.49	375.73	5.65	476.81	470.88	32.56

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	326.65	213.85	246.92	1073.08	0.30	2.26	1.98	8.75
MEAN	17.51	328.54	214.58	248.79	1071.31	0.31	2.34	2.07	6.78
HUB	14.85	350.73	245.11	250.86	1069.57	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	387.63	301.94	173.78	0.28	4238.01	0.92	0.89		
MEAN	342.56	279.77	127.98	0.26	3757.97	0.92	0.89	0.89	1.64
HUB	290.58	254.95	45.46	0.24	3641.12	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.38	1.09	5.99	494.44	1.03	485.90	479.44	24.95
MEAN	6.32	1.08	5.92	492.93	1.02	484.30	478.66	26.38
HUB	6.30	1.08	5.85	492.57	1.02	482.73	478.71	27.85

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.90	35.14	31.50	3.64	0.93	0.51	1.40
MEAN	40.78	27.22	23.50	3.72	0.94	0.49	1.62
HUB	44.34	10.27	6.50	3.77	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	353.1718	215.9873	279.4277	1070.2128	0.3300	-0.1175	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3279	5.8747	483.3368	479.1955	27.5369	37.7027	31.5000	-6.2027

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	275.7898	60.1617	269.1479	1074.5090	0.2567	0.3020	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3249	6.0457	487.2297	478.5026	451.3937	0.0175	0.4262

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	280.3497	0.0000	280.3497	1074.2706	0.2610	0.3295	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.0240	487.0276	478.7791	0.0000	0.0600	0.0495	0.2492

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8565	6.3117	1.0810	493.3127	12.1465	196.8181	1.5257

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
75940.727	0.505	121.133	271009.813	0.194823E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.909 EfDer = 0.987 SH = 0.228221E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
28.226	2242.253	6.312	493.312	1.000	1.000	0.980

W Kg/sec = 12.830 Wdry = 28.162 WH2O = 0.064 lbm/sec H2O = 1.234g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
64.110	2299.226	1.378	0.250	53.422	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50286.730	22127.863	2.732	513.330	187.921	395.845	2.106

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	235.10	-0.08	235.10	0.22	0.41	386.43
MEAN	16.97	0.00	-0.02	235.10	-0.08	235.10	0.22	0.38	
HUB	14.32	0.00	-0.02	235.10	-0.08	235.10	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.05	46.36	11.69	376.87	444.26	6.11	488.90	479.36	28.34
MEAN	54.71	43.80	10.91	332.07	406.94	6.11	488.90	479.36	28.34
HUB	50.01	37.84	12.17	280.20	365.83	6.11	488.90	479.36	28.34

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	315.22	194.59	247.99	1084.99	0.29	2.16	1.89	8.34
MEAN	16.57	317.25	195.74	249.67	1083.41	0.29	2.24	1.97	6.35
HUB	13.89	338.34	226.29	251.52	1081.86	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	369.43	303.43	174.84	0.28	3675.37	0.92	0.90		
MEAN	324.31	280.83	128.57	0.26	3245.52	0.92	0.90	0.90	1.59
HUB	271.79	255.60	45.50	0.24	3144.40	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.81	1.08	6.43	504.80	1.02	496.86	486.37	22.94
MEAN	6.75	1.07	6.36	503.46	1.02	495.42	485.73	24.06
HUB	6.74	1.07	6.30	503.14	1.02	494.00	485.82	25.20

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.12	35.19	31.50	3.69	0.93	0.47	1.40
MEAN	38.10	27.25	23.50	3.75	0.94	0.46	1.62
HUB	41.98	10.25	6.50	3.75	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.987	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	337.1349	196.8394	273.7046	1082.6199	0.3114	-0.0941	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7603	6.3272	494.7251	486.1926	24.8493	35.7225	32.4000	-3.3224

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	275.5294	61.7932	268.5108	1085.9061	0.2537	0.2583	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7590	6.4674	497.7382	485.6314	432.2457	0.0135	0.3999

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	273.2949	0.0000	273.2949	1086.0015	0.2517	0.3106	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.4617	497.8368	485.8696	0.0000	0.0600	0.0404	0.2442

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8709	6.7482	1.0691	503.7977	10.4859	213.7209	1.6568

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
65687.422	0.481	104.778	278157.750	0.258720E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.263 EfDer = 0.995 SH = 0.301009E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
28.226	2242.253	6.748	503.797	1.000	1.000	0.980

W Kg/sec = 12.830 Wdry = 28.141 WH2O = 0.085 lbm/sec H2O = 1.707g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
60.597	2275.175	1.377	0.251	53.446	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
47944.465	22121.494	2.868	509.668	177.707	384.739	2.165

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	225.76	-0.08	225.76	0.21	0.39	363.73
MEAN	15.91	0.00	-0.02	225.76	-0.08	225.76	0.21	0.35	
HUB	13.07	0.00	-0.02	225.76	-0.08	225.76	0.21	0.31	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.80	47.36	10.44	358.47	423.71	6.55	499.74	486.51	26.02
MEAN	54.06	44.80	9.26	311.38	384.67	6.55	499.74	486.51	26.02
HUB	48.57	38.84	9.73	255.75	341.19	6.55	499.74	486.51	26.02

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	299.86	181.67	238.56	1095.64	0.27	2.05	1.78	7.43
MEAN	15.50	299.47	178.83	240.21	1094.02	0.27	2.13	1.86	5.75
HUB	12.59	315.51	202.47	241.98	1092.41	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	351.04	292.57	169.37	0.27	3260.55	0.92	0.91		
MEAN	303.25	270.52	124.41	0.25	2772.74	0.92	0.91	0.91	1.57
HUB	246.35	245.93	43.89	0.23	2550.06	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.21	1.07	6.85	513.96	1.02	506.80	492.48	21.93
MEAN	7.14	1.06	6.78	512.44	1.02	505.30	491.77	22.98
HUB	7.11	1.05	6.71	511.75	1.02	503.82	491.64	24.07

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.29	35.37	31.50	3.87	0.93	0.46	1.40
MEAN	36.67	27.38	23.50	3.88	0.93	0.44	1.64
HUB	39.92	10.28	6.50	3.78	0.93	0.42	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	328.3711	182.1136	273.2439	1092.7198	0.3005	-0.1760	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.1463	6.7189	504.1317	492.3119	24.0386	33.6829	33.0000	-0.6829

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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   279.8107    63.8950   272.4178  1095.2605     0.2555     0.1333     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     7.1449     6.8328   506.4841   491.8383   410.5396     0.0237     0.3716

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   272.2267     0.0000   272.2267  1095.6107     0.2485     0.2940     0.5109

Blockage4   Ps4       Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     6.8446   506.8182   492.0401     0.0000     0.0600     0.0368     0.1652

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4       Tt2avg      Del T     Ns          Ns nondim
 0.8795     7.1401     1.0581   512.7184     8.9214   235.1470     1.8228

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  56020.492       0.455      89.358  292527.719   0.337738E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1353   Tt4 =   512.7184   T1  =   451.6027

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    381973.06    609.2828     80.1797      1.4787      0.8382     15.5764      1.1353     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 30029 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =14.070   EfDer =  0.966    SH =  0.637685E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     32.367    2129.014       5.592     461.412       1.000       1.000       0.980
  W Kg/sec =  14.712  Wdry =  32.346  WH2O = 0.021  lbm/sec   H2O =   0.330g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.243    2257.303       1.381       0.249      53.369      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60211.762   25390.154       3.539     831.557     234.968     619.754       2.638

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   173.78    -0.06   173.78     0.17     0.40   406.37
 MEAN    17.06     0.00    -0.02   173.78    -0.06   173.78     0.17     0.35
 HUB     12.51     0.00    -0.02   173.78    -0.06   173.78     0.17     0.28

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.61    50.47    15.14   383.29   420.90      5.49   458.99   454.81    26.44
 MEAN    61.27    47.20    14.07   316.96   361.53      5.49   458.99   454.81    26.44
 HUB     53.22    38.62    14.60   232.43   290.26      5.49   458.99   454.81    26.44

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   347.96   256.41   235.22  1052.74      0.33     7.29     6.52    16.04
 MEAN    18.04   354.47   263.09   237.55  1050.49      0.34     7.43     6.80    12.53
 HUB     15.00   386.79   302.65   240.85  1047.63      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    383.29   267.26   126.88     0.25  5290.93      0.92     0.88
 MEAN   335.09   248.22    72.00     0.24  4746.17      0.92     0.88     0.88     1.67
 HUB    278.69   242.04    23.96     0.23  4540.51      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.23     1.11     5.78   477.20     1.03   467.47   467.18    25.30
 MEAN     6.16     1.10     5.70   475.57     1.03   465.48   466.20    27.31
 HUB      6.14     1.10     5.59   474.96     1.03   462.95   466.10    30.10

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     47.47    28.34    24.20     4.14     0.93     0.53     1.80
 MEAN    47.92    16.86    12.70     4.16     0.95     0.48     2.22
 HUB     51.49    -5.68    -9.30     3.62     0.95     0.35     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.966       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   365.8358   262.5821   254.7283  1050.1018     0.3484    -0.0416     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.1716     5.6810   465.1697   466.6391    28.5775    45.8698    35.4000   -10.4698

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   255.2309    62.4373   247.4760  1056.2913     0.2416     0.4737     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.1635     5.9214   470.6809   466.0282   554.9116     0.0266     0.5628

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   253.8385     0.0000   253.8385  1056.3297     0.2403     0.4530     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9032   470.7387   466.4857     0.0000     0.0600     0.0712     0.4362
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8324     6.1419     1.0983   475.9065    14.4959   174.8333     1.3553

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  90350.523       0.615     165.258  336749.094   0.106268E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =13.038   EfDer =  0.973    SH =  0.151858E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     32.367    2129.014       6.142     475.906       1.000       1.000       0.980
 W Kg/sec =  14.712  Wdry =  32.318  WH2O = 0.049  lbm/sec   H2O =   0.828g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     74.202    2222.674       1.379       0.249      53.398      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57156.277   25381.357       2.716     590.487     217.394     468.502       2.155

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   232.30    -0.08   232.30     0.22     0.42   398.59
 MEAN    18.08     0.00    -0.02   232.30    -0.08   232.30     0.22     0.39
 HUB     15.21     0.00    -0.02   232.30    -0.08   232.30     0.22     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.69    46.36    12.33   381.80   446.99      5.94   471.59   467.97    38.34
 MEAN    55.34    42.30    13.04   335.88   408.45      5.94   471.59   467.97    38.34
 HUB     50.59    37.84    12.75   282.59   365.88      5.94   471.59   467.97    38.34

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   321.98   206.01   247.45  1066.72      0.30     2.33     2.04     9.02
 MEAN    18.01   324.07   207.11   249.25  1065.02      0.30     2.40     2.13     7.35
 HUB     15.22   346.05   237.95   251.26  1063.35      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    379.39   302.14   173.38     0.28  4208.31      0.92     0.89
 MEAN   334.61   279.97   127.50     0.26  3731.56      0.92     0.89     0.89     1.60
 HUB    282.83   255.23    44.88     0.24  3623.50      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.68     1.09     6.28   488.43     1.03   480.13   476.45    29.44
 MEAN     6.62     1.08     6.21   487.01     1.02   478.60   475.67    31.10
 HUB      6.60     1.08     6.14   486.69     1.02   477.10   475.72    32.81

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.78    35.02    31.50     3.52     0.93     0.49     1.40
 MEAN    39.72    27.09    23.50     3.59     0.94     0.47     1.63
 HUB     43.44    10.13     6.50     3.63     0.94     0.47     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.973       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   348.9792   207.6956  280.4444  1063.9066     0.3280    -0.1219     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6305     6.1609   477.6254   476.1961    32.4695    36.5234    30.6000    -5.9234

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   273.3297    57.9478   267.1164  1068.0906     0.2559     0.2960     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6276     6.3366   481.3932   475.5210   491.5697     0.0170     0.4027

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   282.9444     0.0000   282.9444  1067.6007     0.2650     0.3037     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.3035	480.9659	475.8089	0.0000	0.0600	0.0484	0.2178

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8542	6.6143	1.0769	487.3721	11.4666	202.7077	1.5714

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
71644.281	0.498	131.043	307906.594	0.170732E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =10.610 EfDer = 0.988 SH = 0.196282E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
32.367	2129.014	6.614	487.372	1.000	1.000	0.980

W Kg/sec = 14.712 Wdry = 32.303 WH2O = 0.064 lbm/sec H2O = 1.124g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.728	2196.374	1.379	0.250	53.412	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54416.758	25376.910	2.669	545.479	204.349	424.468	2.077

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	239.42	-0.08	239.42	0.22	0.41	384.67
MEAN	17.74	0.00	-0.02	239.42	-0.08	239.42	0.22	0.38	
HUB	15.05	0.00	-0.02	239.42	-0.08	239.42	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.30	46.36	10.94	372.88	443.20	6.39	482.79	476.25	32.85
MEAN	54.01	43.40	10.61	329.57	407.42	6.39	482.79	476.25	32.85
HUB	49.44	38.84	10.60	279.62	368.17	6.39	482.79	476.25	32.85

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	317.19	188.82	254.86	1078.01	0.29	2.26	1.98	8.75
MEAN	17.51	321.20	193.44	256.41	1076.63	0.30	2.34	2.07	6.78
HUB	14.85	345.19	229.18	258.13	1075.28	0.32	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	368.05	311.57	179.23	0.29	3742.26	0.92	0.90		
MEAN	325.26	288.31	131.81	0.27	3387.96	0.92	0.90	0.90	1.54
HUB	275.90	262.32	46.72	0.24	3404.58	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.12	1.08	6.71	498.49	1.02	490.44	483.38	26.51
MEAN	7.08	1.07	6.66	497.44	1.02	489.19	482.87	27.67
HUB	7.08	1.07	6.60	497.48	1.02	487.96	483.17	28.83

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.53	35.12	31.50	3.62	0.93	0.45	1.40
MEAN	37.03	27.21	23.50	3.71	0.94	0.44	1.62
HUB	41.60	10.26	6.50	3.76	0.94	0.45	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.988	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	347.7197	194.7113	288.0911	1075.4469	0.3233	-0.1321	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.0880	6.5998	488.1407	483.4295	28.9149	34.0535	31.5000	-2.5535

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	285.4508	62.2692	278.5763	1078.9086	0.2646	0.2258	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.0864	6.7548	491.2915	482.8319	451.3937	0.0135	0.3673

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	290.0312	0.0000	290.0312	1078.6655	0.2689	0.2743	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7337	491.0815	483.0980	0.0000	0.0600	0.0388	0.1776

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8726	7.0754	1.0697	497.8022	10.4308	212.0986	1.6442

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
65274.102	0.482	119.391	308121.469	0.219937E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.580 EfDer = 0.997 SH = 0.251558E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
32.367	2129.014	7.075	497.802	1.000	1.000	0.980

W Kg/sec = 14.712 Wdry = 32.285 WH2O = 0.081 lbm/sec H2O = 1.508g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.877	2173.243	1.378	0.250	53.430	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51988.602	25371.369	2.658	513.330	193.133	395.845	2.050

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	243.06	-0.08	243.06	0.22	0.40	365.26
MEAN	16.97	0.00	-0.02	243.06	-0.08	243.06	0.22	0.37	
HUB	14.32	0.00	-0.02	243.06	-0.08	243.06	0.22	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.82	46.36	9.46	357.83	432.65	6.83	493.09	483.55	29.49
MEAN	52.38	43.80	8.58	315.30	398.18	6.83	493.09	483.55	29.49
HUB	47.60	37.84	9.76	266.05	360.43	6.83	493.09	483.55	29.49

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	308.22	168.96	257.79	1088.00	0.28	2.16	1.89	8.34
MEAN	16.57	312.35	174.37	259.14	1086.81	0.29	2.24	1.97	6.35
HUB	13.89	335.21	210.80	260.64	1085.64	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	350.77	315.45	181.82	0.29	3191.55	0.92	0.91		
MEAN	307.93	291.53	133.55	0.27	2891.48	0.92	0.91	0.91	1.49
HUB	258.06	264.89	47.27	0.24	2929.16	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.53	1.06	7.13	507.26	1.02	499.68	489.36	24.93
MEAN	7.49	1.06	7.08	506.38	1.02	498.59	488.97	25.82
HUB	7.49	1.06	7.02	506.49	1.02	497.52	489.30	26.72

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.24	35.20	31.50	3.70	0.93	0.41	1.40
MEAN	33.94	27.27	23.50	3.77	0.93	0.40	1.62
HUB	38.96	10.28	6.50	3.78	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.997	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	333.9382	175.3551	284.1924	1085.9348	0.3075	-0.1066	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.5012	7.0321	497.8143	489.4576	26.7043	31.6758	32.4000	0.7242

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	287.1395	64.3970	279.8252	1088.4563	0.2638	0.1739	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.5003     7.1514   500.1330   489.0060   432.2457     0.0121     0.3367

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   284.7411     0.0000   284.7411  1088.5657     0.2616     0.2450     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.1470   500.2430   489.2150     0.0000     0.0600     0.0368     0.1637

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8788     7.4897     1.0586   506.7087     8.9073   233.0533     1.8066

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  55842.703       0.454     102.140  317289.594   0.279980E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.727   EfDer =  1.000    SH =  0.318533E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     32.367    2129.014       7.490     506.708       1.000       1.000       0.980
 W Kg/sec =  14.712  Wdry =  32.264  WH2O = 0.103  lbm/sec   H2O =   1.990g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.787    2154.058       1.377       0.251      53.452      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  49908.781   25364.643       2.768     509.668     184.151     384.739       2.089

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   235.01    -0.08   235.01     0.22     0.38   344.36
 MEAN    15.91     0.00    -0.02   235.01    -0.08   235.01     0.22     0.35
 HUB     13.07     0.00    -0.02   235.01    -0.08   235.01     0.22     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.38    47.36     8.02   340.37   413.69     7.26   502.31   489.70    27.60
 MEAN    51.53    44.80     6.73   295.65   377.74     7.26   502.31   489.70    27.60
 HUB     45.95    38.84     7.11   242.83   337.99     7.26   502.31   489.70    27.60

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   294.30   155.80   249.67  1096.98     0.27     2.05     1.78     7.43
 MEAN    15.50   296.43   157.69   251.01  1095.75     0.27     2.13     1.86     5.75
 HUB     12.59   314.72   187.93   252.45  1094.54     0.29     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    333.31   306.34   177.51     0.28  2796.57     0.92     0.91
 MEAN   287.93   282.79   130.25     0.26  2445.04     0.92     0.91     0.91     1.47
 HUB    233.91   256.60    45.98     0.23  2367.13     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.91     1.06     7.53   514.98     1.02   508.09   494.63    24.12
 MEAN     7.85     1.05     7.47   513.94     1.01   506.95   494.17    24.98
 HUB      7.84     1.05     7.41   513.71     1.01   505.82   494.29    25.86

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.97    35.41    31.50     3.91     0.93     0.39     1.40
 MEAN    32.14    27.42    23.50     3.92     0.93     0.38     1.64
 HUB     36.67    10.32     6.50     3.82     0.93     0.38     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   327.7162   160.5772   285.6797  1094.3342     0.2995    -0.1948     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.8590     7.3923   505.6649   494.7520    26.1898    29.3398    33.0000     3.6602
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   293.6122    67.0466   285.8547  1096.1534     0.2679     0.0283     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.8565     7.4803   507.3519   494.4043   410.5396     0.0264     0.3057

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   285.6216     0.0000   285.6216  1096.5438     0.2605     0.2191     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.4945   507.7209   494.5605     0.0000     0.0600     0.0412     0.0641

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8751     7.8506     1.0482   514.2125     7.5043   259.2421     2.0096

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  47149.500       0.424      86.240  334585.844   0.351694E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1144   Tt4 =   514.2125   T1  =   461.4116

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    330261.13    604.0712     80.2428      1.4038      0.8528     14.0701      1.1144     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 25666 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.214   EfDer =  0.995    SH =  0.835716E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     40.890    1957.502       6.513     472.322       1.000       1.000       0.980
 W Kg/sec =  18.587  Wdry =  40.856  WH2O = 0.034  lbm/sec   H2O =   0.491g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     88.069    2051.350       1.380       0.249      53.375      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  67066.156   32074.182       3.224     831.557     257.924     619.754       2.403

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   193.56    -0.07   193.56     0.18     0.38   369.30
 MEAN    17.06     0.00    -0.02   193.56    -0.07   193.56     0.18     0.33
 HUB     12.51     0.00    -0.02   193.56    -0.07   193.56     0.18     0.27

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     61.23    50.47    10.76   352.41   402.13     6.36   469.32   463.78    25.00
 MEAN    56.41    47.20     9.21   291.43   349.91     6.36   469.32   463.78    25.00
 HUB     47.84    38.62     9.22   213.70   288.38     6.36   469.32   463.78    25.00

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   337.98   210.14   264.71  1061.15      0.32     7.29     6.52    16.04
 MEAN    18.04   350.56   227.71   266.54  1059.67      0.33     7.43     6.80    12.53
 HUB     15.00   391.16   283.39   269.63  1057.41      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    352.41   300.52   142.27     0.28  4336.62      0.92     0.91
 MEAN   308.10   278.40    80.39     0.26  4108.07      0.92     0.91     0.91     1.42
 HUB    256.24   270.99    27.15     0.26  4251.68      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.07     1.09     6.60   484.21     1.03   475.04   473.12    25.88
 MEAN     7.04     1.08     6.53   483.58     1.02   473.72   472.85    27.16
 HUB      7.06     1.08     6.43   483.97     1.02   471.70   473.49    29.23

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.44    28.26    24.20     4.06     0.93     0.40     1.80
 MEAN    40.51    16.78    12.70     4.08     0.93     0.36     2.22
 HUB     46.43    -5.75    -9.30     3.55     0.93     0.24     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.995       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   365.3791   227.2649   286.0988  1059.0692     0.3450    -0.0594     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     7.0517     6.5016   473.2187   473.3285    28.5305    38.4622    35.4000    -3.0622

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   288.9114    70.6766   280.1332  1063.5377     0.2717     0.3373     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     7.0491     6.7015   477.2296   472.8461   554.9116     0.0147     0.4374

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   286.8137     0.0000   286.8137  1063.6273     0.2697     0.3492     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     6.6937   477.3274   473.2630     0.0000     0.0600     0.0398     0.3227
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8745     7.0357     1.0803   483.9196    11.5986   200.4025     1.5535

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  72355.570       0.583     167.196  419227.375   0.127524E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.383   EfDer =  0.999    SH =  0.171215E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
    40.890    1957.502       7.036     483.919       1.000       1.000       0.980
 W Kg/sec =  18.587  Wdry =  40.820  WH2O = 0.070  lbm/sec   H2O =   1.046g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    82.521    2026.627       1.379       0.250      53.404      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64496.695   32063.113       2.442     590.487     241.801     468.502       1.938

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   262.13    -0.09   262.13     0.25     0.41   363.43
 MEAN   18.08     0.00    -0.02   262.13    -0.09   262.13     0.25     0.38
 HUB    15.21     0.00    -0.02   262.13    -0.09   262.13     0.25     0.35

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    53.26     46.36     6.90   351.04   438.19     6.75   478.42   474.58    36.44
 MEAN   49.68     42.30     7.38   308.82   405.14     6.75   478.42   474.58    36.44
 HUB    44.76     37.84     6.92   259.82   369.15     6.75   478.42   474.58    36.44

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   320.09   150.83   282.33  1071.10     0.30     2.33     2.04     9.02
 MEAN   18.01   326.69   162.47   283.43  1070.26     0.31     2.40     2.13     7.35
 HUB    15.22   353.18   208.98   284.71  1069.44     0.33     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   348.82   344.83   197.99     0.32  3081.88     0.92     0.91
 MEAN  307.65   318.45   145.19     0.30  2927.62     0.92     0.91     0.91     1.38
 HUB   260.05   289.25    51.06     0.27  3182.74     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     7.45     1.06     7.01   492.34     1.02   484.15   480.28    31.05
 MEAN    7.43     1.06     6.97   491.92     1.02   483.38   480.11    31.89
 HUB     7.47     1.06     6.93   492.62     1.02   482.64   480.81    32.70

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    28.11    35.04    31.50     3.54     0.93     0.34     1.40
 MEAN   29.82    27.12    23.50     3.62     0.93     0.34     1.63
 HUB    36.28    10.17     6.50     3.67     0.93     0.36     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.999       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   358.7127   162.9210   319.5803  1068.7067     0.3357    -0.1636     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   7.4444     6.8937   482.0027   480.7528    33.7162    27.0123    30.6000     3.5877

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   313.7781    66.5232   306.6454  1071.3823     0.2929     0.0990     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     7.4422     7.0181   484.4195   480.2902   491.5697     0.0147     0.2570

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   324.9622     0.0000   324.9622  1070.7406     0.3035     0.1500     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9763	483.8490	480.5872	0.0000	0.0600	0.0410	0.0116

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8715	7.4296	1.0560	492.2934	8.3745	250.4666	1.9416

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
52362.820	0.430	120.998	386512.063	0.188386E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.482 EfDer = 0.995 SH = 0.209924E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
40.890	1957.502	7.430	492.293	1.000	1.000	0.980

W Kg/sec = 18.587 Wdry = 40.805 WH2O = 0.086 lbm/sec H2O = 1.327g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.819	2009.317	1.379	0.250	53.416	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62289.262	32058.219	2.361	545.479	231.015	424.468	1.837

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	274.06	-0.09	274.06	0.26	0.41	351.91
MEAN	17.74	0.00	-0.02	274.06	-0.09	274.06	0.26	0.38	
HUB	15.05	0.00	-0.02	274.06	-0.09	274.06	0.26	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.37	46.36	5.01	342.84	438.99	7.11	486.29	480.75	33.75
MEAN	47.88	43.40	4.48	303.02	408.64	7.11	486.29	480.75	33.75
HUB	43.18	38.84	4.34	257.09	375.83	7.11	486.29	480.75	33.75

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	322.79	129.80	295.54	1078.57	0.30	2.26	1.98	8.75
MEAN	17.51	330.26	146.05	296.22	1078.09	0.31	2.34	2.07	6.78
HUB	14.85	357.67	199.18	297.08	1077.64	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	338.40	361.74	208.60	0.34	2573.30	0.92	0.91		
MEAN	299.05	333.40	153.00	0.31	2558.51	0.92	0.91	0.91	1.32
HUB	253.67	302.04	54.49	0.28	2959.23	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.79	1.05	7.32	499.32	1.01	490.99	485.36	29.94
MEAN	7.78	1.05	7.30	499.28	1.01	490.56	485.43	30.37
HUB	7.84	1.06	7.27	500.37	1.02	490.15	486.35	30.76

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	23.71	35.22	31.50	3.72	0.93	0.28	1.40
MEAN	26.25	27.32	23.50	3.82	0.92	0.29	1.62
HUB	33.84	10.39	6.50	3.89	0.92	0.33	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	364.6234	147.0085	333.6746	1076.3912	0.3387	-0.1762	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.7995	7.2125	489.0358	486.1301	32.2011	23.7771	31.5000	7.7229

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	333.2809	72.7030	325.2544	1078.3124	0.3091	0.0038	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.7943	7.3019	490.7832	485.7724	451.3937	0.0204	0.2151

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	339.0685	0.0000	339.0685	1077.9641	0.3145	0.0948	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.2682	490.4731	486.0091	0.0000	0.0600	0.0562	-0.0631

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8422	7.7762	1.0467	499.6547	7.3618	270.8624	2.0997

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
46090.621	0.402	106.504	389257.156	0.229152E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 1.906 EfDer = 0.975 SH = 0.253255E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
40.890	1957.502	7.776	499.654	1.000	1.000	0.980

W Kg/sec = 18.587 Wdry = 40.787 WH2O = 0.104 lbm/sec H2O = 1.648g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
75.866	1994.461	1.378	0.250	53.430	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60517.816	32052.727	2.308	513.330	222.424	395.845	1.780

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	282.94	-0.10	282.94	0.26	0.40	335.21
MEAN	16.97	0.00	-0.02	282.94	-0.10	282.94	0.26	0.37	
HUB	14.32	0.00	-0.02	282.94	-0.10	282.94	0.26	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.31	46.36	2.95	329.01	434.01	7.42	493.27	486.07	32.01
MEAN	45.71	43.80	1.91	289.90	405.16	7.42	493.27	486.07	32.01
HUB	40.86	37.84	3.02	244.62	374.09	7.42	493.27	486.07	32.01

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	322.53	106.60	304.41	1084.89	0.30	2.16	1.89	8.34
MEAN	16.57	329.36	124.87	304.77	1084.67	0.30	2.24	1.97	6.35
HUB	13.89	354.89	180.84	305.36	1084.46	0.33	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	322.52	373.21	215.91	0.34	2014.52	0.92	0.89		
MEAN	283.12	343.40	158.25	0.32	2071.31	0.92	0.89	0.89	1.27
HUB	237.27	310.53	56.43	0.29	2513.29	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.06	1.04	7.59	505.15	1.01	496.85	489.62	29.50
MEAN	8.07	1.04	7.57	505.30	1.01	496.65	489.79	29.68
HUB	8.13	1.05	7.56	506.51	1.01	496.46	490.73	29.84

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	19.30	35.35	31.50	3.85	0.93	0.23	1.40
MEAN	22.28	27.44	23.50	3.94	0.91	0.25	1.62
HUB	30.64	10.47	6.50	3.97	0.91	0.29	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.975	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	357.7982	125.5771	335.0372	1083.3296	0.3303	-0.1438	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0790	7.4998	495.4394	490.4094	31.0883	20.5468	32.4000	11.8532

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	341.3812	76.5618	332.6852	1084.3292	0.3148	-0.0584	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.0696	7.5417	496.3554	490.2257	432.2457	0.0282	0.1787

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	339.1375	0.0000	339.1375	1084.4576	0.3127	0.0414	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.5238	496.4778	490.3412	0.0000	0.0600	0.0798	-0.0935

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7749	8.0432	1.0343	505.6503	5.9961	311.0760	2.4114

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
37592.535	0.361	86.867	403297.250	0.274317E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-0.483 EfDer = 0.942 SH = 0.301552E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
40.890	1957.502	8.043	505.650	1.000	1.000	0.980

W Kg/sec = 18.587 Wdry = 40.767 WH2O = 0.123 lbm/sec H2O = 2.008g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
73.787	1982.601	1.377	0.251	53.446	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
59142.027	32046.602	2.355	509.668	216.392	384.739	1.778

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	278.49	-0.10	278.49	0.26	0.39	316.95
MEAN	15.91	0.00	-0.02	278.49	-0.10	278.49	0.26	0.36	
HUB	13.07	0.00	-0.02	278.49	-0.10	278.49	0.26	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	48.34	47.36	0.98	312.95	418.99	7.69	499.47	490.33	30.91
MEAN	44.32	44.80	-0.48	271.83	389.23	7.69	499.47	490.33	30.91
HUB	38.73	38.84	-0.11	223.27	357.00	7.69	499.47	490.33	30.91

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	313.90	91.36	300.31	1090.70	0.29	2.05	1.78	7.43
MEAN	15.50	319.22	107.26	300.66	1090.48	0.29	2.13	1.86	5.75
HUB	12.59	340.59	158.90	301.25	1090.25	0.31	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	306.46	369.40	215.10	0.34	1640.73	0.92	0.86		
MEAN	264.74	339.40	157.47	0.31	1663.85	0.92	0.86	0.86	1.24
HUB	215.07	306.44	56.17	0.28	2001.81	0.92	0.86		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.27	1.03	7.81	510.12	1.01	502.27	493.22	29.23
MEAN	8.27	1.03	7.80	510.18	1.01	502.06	493.32	29.42
HUB	8.32	1.03	7.78	511.10	1.01	501.86	494.06	29.58

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	16.92	35.61	31.50	4.11	0.93	0.20	1.40
MEAN	19.63	27.64	23.50	4.14	0.90	0.21	1.64
HUB	27.81	10.56	6.50	4.06	0.90	0.25	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.942	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	360.4472	109.2302	343.4981	1088.3417	0.3312	-0.2483	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2771	7.6808	500.1173	494.1104	31.4688	17.6403	33.0000	15.3597

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   356.7688    81.4685   347.3426  1088.5701     0.3277    -0.2691     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.2512     7.6686   500.3281   494.0655   410.5396     0.0731     0.1467

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   347.0812     0.0000   347.0812  1089.1582     0.3187     0.0077     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.6854   500.8716   494.0789     0.0000     0.0600     0.1030    -0.2345

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6857     8.2366     1.0240   510.4641     4.8142   362.1430     2.8073

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  30229.063       0.322      69.852  427345.594   0.324399E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0808   Tt4 =   510.4641   T1  =   472.3216

   OVERALL EXIT CONDITIONS; ALL          5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    238630.61    551.4178     88.0686      1.2646      0.8244      9.2145     1.0808     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 20047 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.599   EfDer =  0.999    SH =  0.122185E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     50.675    1799.592       7.939     487.554       1.000       1.000       0.980
  W Kg/sec =  23.034  Wdry =  50.613  WH2O = 0.062  lbm/sec   H2O =   0.846g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     90.967    1856.180       1.380       0.249      53.388      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  70481.820   39743.344       3.120     831.557     266.488     619.754       2.326

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   203.42    -0.07   203.42     0.19     0.36   334.16
 MEAN    17.06     0.00    -0.02   203.42    -0.07   203.42     0.19     0.31
 HUB     12.51     0.00    -0.02   203.42    -0.07   203.42     0.19     0.26

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.88    50.47     7.41   323.98   382.61     7.74   484.24   475.83    23.32
 MEAN    52.80    47.20     5.60   267.92   336.45     7.74   484.24   475.83    23.32
 HUB     44.01    38.62     5.39   196.46   282.85     7.74   484.24   475.83    23.32

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.85   172.66   281.05  1075.19      0.31     7.29     6.52    16.04
 MEAN    18.04   344.69   197.86   282.25  1074.32      0.32     7.43     6.80    12.53
 HUB     15.00   388.35   263.96   284.85  1072.57      0.36     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    323.98   319.20   151.32     0.30  3563.38      0.92     0.91
 MEAN   283.25   294.88    85.39     0.27  3569.78      0.92     0.91     0.91     1.27
 HUB    235.57   286.26    28.40     0.27  3960.30      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.43     1.06     7.91   496.52     1.02   487.80   482.96    25.49
 MEAN     8.44     1.06     7.86   496.54     1.02   487.02   483.11    26.18
 HUB      8.49     1.07     7.77   497.52     1.02   485.44   484.14    27.60

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.56    28.30    24.20     4.10     0.93     0.29     1.80
 MEAN    35.03    16.83    12.70     4.13     0.92     0.26     2.22
 HUB     42.82    -5.69    -9.30     3.61     0.92     0.15     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   361.7915   197.4746   303.1450  1073.5673     0.3370    -0.0738     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     8.4479     7.8180   486.3817   483.6261    27.5295    33.0810    35.4000     2.3190

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   308.1497    75.3828   298.7870  1076.7273     0.2862     0.2290     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     8.4455     7.9851   489.2585   483.2521   554.9116     0.0139     0.3498

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   305.8475     0.0000   305.8475  1076.8383     0.2840     0.2537     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     7.9778   489.3728   483.6711     0.0000     0.0600     0.0384     0.2169
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8721     8.4306     1.0619   496.8567     9.3033   222.5688     1.7253

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  58130.223       0.554     166.468  507952.156   0.174884E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.174   EfDer =  0.987    SH =  0.225347E-02

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     50.675    1799.592       8.431     496.856       1.000       1.000       0.980
 W Kg/sec =  23.034  Wdry =  50.561  WH2O = 0.114  lbm/sec   H2O =   1.600g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     86.480    1838.724       1.378       0.250      53.421      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68732.469   39727.172       2.329     590.487     253.494     468.502       1.848

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   279.35    -0.10   279.35     0.26     0.40   329.73
 MEAN    18.08     0.00    -0.02   279.35    -0.10   279.35     0.26     0.37
 HUB     15.21     0.00    -0.02   279.35    -0.10   279.35     0.26     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.13    46.36     2.77   322.73   426.91     8.05   490.63   485.00    34.38
 MEAN    45.47    42.30     3.17   283.91   398.36     8.05   490.63   485.00    34.38
 HUB     40.54    37.84     2.70   238.86   367.61     8.05   490.63   485.00    34.38

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   322.51   106.51   304.41  1081.82      0.30     2.33     2.04     9.02
 MEAN    18.01   329.74   126.07   304.69  1081.67      0.30     2.40     2.13     7.35
 HUB     15.22   356.21   183.71   305.18  1081.53      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    320.68   372.21   214.18     0.34  2176.89      0.92     0.90
 MEAN   282.84   342.65   156.77     0.32  2272.21      0.92     0.90     0.90     1.25
 HUB    239.07   310.16    55.36     0.29  2798.10      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.74     1.04     8.22   502.32     1.01   494.01   488.70    31.85
 MEAN     8.75     1.04     8.21   502.55     1.01   493.87   488.92    31.99
 HUB      8.83     1.05     8.20   503.87     1.01   493.74   489.95    32.10

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     19.28    35.13    31.50     3.63     0.93     0.22     1.40
 MEAN    22.48    27.23    23.50     3.73     0.91     0.24     1.63
 HUB     31.05    10.28     6.50     3.78     0.91     0.28     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.987       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   366.5560   126.4216   344.0652  1079.8021     0.3395    -0.1941     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.7682     8.1057   492.1892   489.6611    34.0577    20.1751    30.6000    10.4249

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   339.7860    72.0371   332.0621  1081.4575     0.3142    -0.0433     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.7593     8.1884   493.6989   489.3359   491.5697     0.0258     0.1619

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   352.5585     0.0000   352.5585  1080.6780     0.3262     0.0250     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1223	492.9938	489.6631	0.0000	0.0600	0.0709	-0.1612

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7994	8.7340	1.0360	502.9146	6.0584	302.5974	2.3457

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
37952.969	0.369	108.686	471250.781	0.244305E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =-0.192 EfDer = 0.947 SH = 0.267122E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
50.675	1799.592	8.734	502.914	1.000	1.000	0.980

W Kg/sec = 23.034 Wdry = 50.540 WH2O = 0.135 lbm/sec H2O = 1.934g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
83.983	1827.617	1.378	0.250	53.435	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
67429.516	39720.613	2.215	545.479	246.246	424.468	1.724

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	296.67	-0.10	296.67	0.27	0.40	320.09
MEAN	17.74	0.00	-0.02	296.67	-0.10	296.67	0.27	0.38	
HUB	15.05	0.00	-0.02	296.67	-0.10	296.67	0.27	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	46.74	46.36	0.38	315.19	432.92	8.30	495.90	489.62	34.00
MEAN	43.21	43.40	-0.19	278.57	407.03	8.30	495.90	489.62	34.00
HUB	38.56	38.84	-0.28	236.35	379.37	8.30	495.90	489.62	34.00

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	334.23	81.30	324.19	1086.15	0.31	2.26	1.98	8.75
MEAN	17.51	341.02	106.65	323.91	1086.45	0.31	2.34	2.07	6.78
HUB	14.85	367.23	172.90	323.98	1086.75	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	311.10	397.38	229.80	0.37	1612.63	0.92	0.87		
MEAN	274.93	365.02	168.28	0.34	1868.90	0.92	0.87	0.87	1.19
HUB	233.21	329.55	60.31	0.30	2569.07	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.96	1.03	8.40	506.95	1.01	498.04	492.43	32.72
MEAN	8.99	1.03	8.41	507.59	1.01	498.32	492.84	32.41
HUB	9.09	1.04	8.41	509.35	1.01	498.59	494.10	32.08

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	14.08	35.33	31.50	3.83	0.93	0.15	1.40
MEAN	18.22	27.45	23.50	3.95	0.90	0.18	1.62
HUB	28.09	10.55	6.50	4.05	0.90	0.25	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.947	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	381.1101	107.3505	365.6786	1084.3190	0.3515	-0.2086	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.0084	8.2817	496.3868	493.7039	34.7119	16.3604	31.5000	15.1396

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	367.5748	80.1840	358.7224	1085.2026	0.3387	-0.1488	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.9912	8.3151	497.1952	493.5132	451.3937	0.0382	0.1175

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	374.9403	0.0000	374.9403	1084.7229	0.3457	-0.0395	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.2530	496.7599	493.7518	0.0000	0.0600	0.1015	-0.2508

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.6772	8.9527	1.0250	507.9657	5.0514	343.1569	2.6601

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
31686.465	0.327	90.741	477185.813	0.286521E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =-3.267 EfDer = 0.888 SH = 0.309960E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
50.675	1799.592	8.953	507.965	1.000	1.000	0.980

W Kg/sec = 23.034 Wdry = 50.518 WH2O = 0.157 lbm/sec H2O = 2.268g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
82.342	1818.507	1.377	0.251	53.449	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
66694.266	39713.875	2.126	513.330	241.498	395.845	1.639

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	311.81	-0.11	311.81	0.29	0.40	305.64
MEAN	16.97	0.00	-0.02	311.81	-0.11	311.81	0.29	0.38	
HUB	14.32	0.00	-0.02	311.81	-0.11	311.81	0.29	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	44.14	46.36	-2.22	302.47	434.49	8.46	500.22	493.48	33.96
MEAN	40.53	43.80	-3.27	266.51	410.26	8.46	500.22	493.48	33.96
HUB	35.81	37.84	-2.03	224.89	384.51	8.46	500.22	493.48	33.96

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	344.39	54.04	340.12	1089.37	0.32	2.16	1.89	8.34
MEAN	16.57	349.41	82.89	339.43	1090.03	0.32	2.24	1.97	6.35
HUB	13.89	372.72	154.37	339.25	1090.67	0.34	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	296.50	417.69	242.46	0.38	1022.33	0.92	0.81		
MEAN	260.28	382.99	177.39	0.35	1375.70	0.92	0.81	0.81	1.14
HUB	218.13	345.19	63.76	0.32	2145.78	0.92	0.81		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.09	1.02	8.49	510.52	1.01	501.08	495.44	33.96
MEAN	9.13	1.02	8.52	511.41	1.01	501.68	495.93	33.28
HUB	9.24	1.03	8.53	513.33	1.01	502.27	497.21	32.59

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	9.03	35.48	31.50	3.98	0.93	0.08	1.40
MEAN	13.72	27.59	23.50	4.09	0.89	0.13	1.62
HUB	24.47	10.64	6.50	4.14	0.89	0.20	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.888	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	383.2126	83.3605	374.0359	1088.2509	0.3521	-0.1714	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1462	8.4059	500.0623	496.7211	35.2269	12.5640	32.4000	19.8360

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	383.6514	86.0418	373.8786	1088.2228	0.3525	-0.2032	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1210     8.3812   500.0361   496.7426   432.2457     0.0492     0.0813

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   382.1234     0.0000   382.1234  1088.3220     0.3511    -0.0904     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.3390   500.1299   496.7956     0.0000     0.0600     0.1305    -0.2690

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.4743     9.0689     1.0130   511.7538     3.7885   423.0544     3.2795

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  23795.484       0.271      68.143  497144.094   0.329469E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-6.128   EfDer =  0.825    SH =  0.354143E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     50.675    1799.592       9.069     511.753       1.000       1.000       0.980
 W Kg/sec =  23.034  Wdry =  50.496  WH2O = 0.179  lbm/sec   H2O =   2.606g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     81.589    1811.764       1.377       0.251      53.463      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66338.273   39706.918       2.129     509.668     239.355     384.739       1.607

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   312.38    -0.11   312.38     0.29     0.39   289.64
 MEAN    15.91     0.00    -0.02   312.38    -0.11   312.38     0.29     0.37
 HUB     13.07     0.00    -0.02   312.38    -0.11   312.38     0.29     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     42.66    47.36    -4.70   287.70   424.75     8.58   503.99   496.34    34.01
 MEAN    38.67    44.80    -6.13   249.90   400.11     8.58   503.99   496.34    34.01
 HUB     33.32    38.84    -5.52   205.26   373.84     8.58   503.99   496.34    34.01

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   343.20    35.96   341.31  1092.47     0.31     2.05     1.78     7.43
 MEAN    15.50   346.52    63.72   340.61  1093.20     0.32     2.13     1.86     5.75
 HUB     12.59   365.61   133.21   340.48  1093.89     0.33     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    281.74   420.60   245.78     0.38   647.03     0.92     0.76
 MEAN   243.38   385.09   179.66     0.35   989.24     0.92     0.76     0.76     1.11
 HUB    197.72   346.53    64.51     0.32  1678.50     0.92     0.76

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.15     1.01     8.55   513.37     1.00   504.00   497.81    34.86
 MEAN     9.19     1.01     8.58   514.22     1.00   504.67   498.25    34.09
 HUB      9.28     1.02     8.60   515.95     1.01   505.32   499.34    33.33

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      6.01    35.76    31.50     4.26     0.93     0.04     1.40
 MEAN    10.60    27.81    23.50     4.31     0.87     0.09     1.64
 HUB     21.37    10.73     6.50     4.23     0.87     0.16     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.825       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   396.0574    64.8895   390.7055  1090.3275     0.3632    -0.2839     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.1922     8.4035   502.0420   499.3327    37.1649     9.4298    33.0000    23.5702
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   409.4097    93.4890   398.5926  1089.4015     0.3758    -0.4433     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1341     8.2985   501.1877   499.5694   410.5396     0.1126     0.0542

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   398.0790     0.0000   398.0790  1090.1921     0.3651    -0.1005     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.3242   501.9156   499.4535     0.0000     0.0600     0.1447    -0.4024

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.2511     9.1139     1.0050   514.5137     2.7600   534.5090     4.1435

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  17359.328       0.219      49.712  529251.188   0.374229E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0553   Tt4 =   514.5137   T1  =   487.5539

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    168924.47    483.7512     90.9675      1.1480      0.6971      5.5992      1.0553     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 15435 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 6.729   EfDer =  1.000    SH =  0.179446E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     49.466    1590.744       9.337     500.811       1.000       1.000       0.980
  W Kg/sec =  22.484  Wdry =  49.377  WH2O = 0.089  lbm/sec   H2O =   1.430g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.521    1618.904       1.379       0.250      53.406      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59787.051   38785.934       3.708     831.557     224.254     619.754       2.764

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   172.55    -0.06   172.55     0.16     0.31   291.44
 MEAN    17.06     0.00    -0.02   172.55    -0.06   172.55     0.16     0.27
 HUB     12.51     0.00    -0.02   172.55    -0.06   172.55     0.16     0.23

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.93     50.47     8.46   286.38   334.40     9.18   498.43   486.10    22.86
 MEAN    53.93     47.20     6.73   236.83   293.07     9.18   498.43   486.10    22.86
 HUB     45.19     38.62     6.57   173.66   244.86     9.18   498.43   486.10    22.86

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   286.39   158.01   238.86  1090.02      0.26     7.29     6.52    16.04
 MEAN    18.04   298.58   178.03   239.70  1089.28      0.27     7.43     6.80    12.53
 HUB     15.00   335.05   232.39   241.36  1087.94      0.31     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    286.38   271.17   128.37     0.25  3260.98      0.92     0.91
 MEAN   250.37   250.38    72.34     0.23  3212.01      0.92     0.91     0.91     1.31
 HUB    208.23   242.57    24.16     0.22  3486.59      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.79     1.05     9.34   508.05     1.01   501.49   492.07    25.70
 MEAN     9.79     1.05     9.30   507.94     1.01   500.81   492.13    26.25
 HUB      9.83     1.05     9.21   508.55     1.02   499.58   492.84    27.29

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.49    28.26    24.20     4.06     0.93     0.32     1.80
 MEAN    36.60    16.79    12.70     4.09     0.93     0.29     2.22
 HUB     43.92    -5.72    -9.30     3.58     0.93     0.18     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       1.000       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   312.5327   177.6868   257.1071  1088.7396     0.2871    -0.0691     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     9.7977     9.2608   500.3814   492.5965    27.4221    34.6484    35.4000     0.7516

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   262.1818    64.1377   254.2158  1091.2379     0.2403     0.2577     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     9.7970     9.4169   502.6926   492.3142   554.9116     0.0113     0.3708

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   260.1616     0.0000   260.1616  1091.3138     0.2384     0.2778     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.4100   502.7780   492.8768     0.0000     0.0600     0.0368     0.2443
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8762     9.7837     1.0478   508.1794     7.3685   215.4346     1.6700

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  46151.797       0.563     129.011  483482.938   0.259083E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 4.208   EfDer =  0.994    SH =  0.336287E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.466    1590.744       9.784     508.179       1.000       1.000       0.980
 W Kg/sec =  22.484  Wdry =  49.299  WH2O = 0.166  lbm/sec   H2O =   2.734g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.565    1607.125       1.377       0.251      53.457      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58599.566   38761.879       2.736     590.487     215.786     468.502       2.171

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   238.16    -0.08   238.16     0.22     0.34   288.20
 MEAN    18.08     0.00    -0.02   238.16    -0.08   238.16     0.22     0.32
 HUB     15.21     0.00    -0.02   238.16    -0.08   238.16     0.22     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     50.15    46.36     3.79   285.27   371.68     9.47   503.67   494.70    36.10
 MEAN    46.51    42.30     4.21   250.96   346.04     9.47   503.67   494.70    36.10
 HUB     41.57    37.84     3.73   211.14   318.33     9.47   503.67   494.70    36.10

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   278.94   100.76   260.11  1095.22      0.25     2.33     2.04     9.02
 MEAN    18.01   285.18   116.29   260.39  1095.00      0.26     2.40     2.13     7.35
 HUB     15.22   308.19   164.21   260.80  1094.80      0.28     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    283.47   317.87   182.71     0.29  2059.13      0.92     0.91
 MEAN   250.01   292.72   133.72     0.27  2095.84      0.92     0.91     0.91     1.27
 HUB    211.32   265.02    47.11     0.24  2501.02      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.08     1.03     9.64   512.73     1.01   506.54   497.78    34.23
 MEAN    10.08     1.03     9.63   512.81     1.01   506.34   497.89    34.43
 HUB     10.14     1.04     9.61   513.70     1.01   506.15   498.63    34.62

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     21.17    35.09    31.50     3.59     0.93     0.24     1.40
 MEAN    24.07    27.18    23.50     3.68     0.92     0.26     1.63
 HUB     32.20    10.24     6.50     3.74     0.92     0.30     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   315.4818   116.6153   293.1376  1093.7086     0.2885    -0.1838     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.0960     9.5383   505.1625   498.4972    35.9454    21.6935    30.6000     8.9065

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   289.7955    61.4387   283.2079  1095.0435     0.2646    -0.0101     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.0916     9.6196   506.3983   498.2122   491.5697     0.0193     0.1815

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   300.0455     0.0000   300.0455  1094.5126     0.2741     0.0513     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.5669	505.9138	498.5275	0.0000	0.0600	0.0623	-0.1207

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8255	10.0711	1.0294	513.0726	4.9004	288.7702	2.2385

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
30811.590	0.383	86.129	448228.406	0.362904E-02

Melt Ratio at Stator LE, Throat, TE
0.37432E-01 0.52415E-01 0.10861E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 0.755 EfDer = 0.961 SH = 0.390785E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.466	1590.744	10.071	513.069	1.000	1.000	0.980

W Kg/sec = 22.484 Wdry = 49.272 WH2O = 0.193 lbm/sec H2O = 3.229g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
71.809	1599.443	1.376	0.251	53.475	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
57664.270	38753.492	2.589	545.479	210.714	424.468	2.014

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	253.71	-0.09	253.71	0.23	0.34	280.12
MEAN	17.74	0.00	-0.02	253.71	-0.09	253.71	0.23	0.32	
HUB	15.05	0.00	-0.02	253.71	-0.09	253.71	0.23	0.30	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	47.69	46.36	1.33	278.61	376.88	9.71	507.96	498.64	36.56
MEAN	44.15	43.40	0.75	246.24	353.62	9.71	507.96	498.64	36.56
HUB	39.48	38.84	0.64	208.92	328.71	9.71	507.96	498.64	36.56

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	288.28	78.67	277.34	1098.76	0.26	2.26	1.98	8.75
MEAN	17.51	294.49	99.19	277.28	1098.87	0.27	2.34	2.07	6.78
HUB	14.85	317.66	154.77	277.41	1098.99	0.29	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	275.00	339.79	196.32	0.31	1560.30	0.92	0.88		
MEAN	243.02	312.36	143.83	0.28	1738.10	0.92	0.88	0.88	1.21
HUB	206.15	282.12	51.38	0.26	2299.63	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.29	1.02	9.82	516.50	1.01	509.90	500.94	35.18
MEAN	10.31	1.02	9.82	516.90	1.01	510.01	501.21	35.06
HUB	10.39	1.03	9.82	518.13	1.01	510.12	502.12	34.91

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	15.84	35.29	31.50	3.79	0.93	0.17	1.40
MEAN	19.68	27.42	23.50	3.92	0.91	0.20	1.62
HUB	29.16	10.49	6.50	3.99	0.91	0.26	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.961	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	327.5032	99.8454	311.9122	1097.3962	0.2984	-0.1979	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3279	9.7190	508.6560	501.8715	36.6618	17.7502	31.5000	13.7498

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	313.4297	68.3726	305.8813	1098.1636	0.2854	-0.1157	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.3179	9.7591	509.3681	501.6809	451.3937	0.0295	0.1355

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4        Cm4        Ao4           Mach4      cp 3-4   Stator Gap
   17.1214    319.0372     0.0000    319.0372  1097.8419      0.2906    -0.0156     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.7095   509.0733   501.8501     0.0000      0.0600     0.0922    -0.2121

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.7252    10.2857      1.0213   517.1550     4.1088   326.5510     2.5314

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  25874.248       0.342      72.328  454382.656   0.409221E-02

Melt Ratio at Stator LE, Throat, TE
0.40354E+00 0.44551E+00 0.56568E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =-2.347   EfDer =  0.908    SH =  0.428318E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.466    1590.744      10.286     517.148       1.000       1.000       0.980
 W Kg/sec =  22.484  Wdry =  49.254  WH2O = 0.212  lbm/sec   H2O =   3.576g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     70.590    1593.118       1.376       0.252      53.487      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57072.195   38747.707       2.478     513.330     207.187     395.845       1.911

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   266.83    -0.09   266.83     0.24     0.34   267.76
 MEAN    16.97     0.00    -0.02   266.83    -0.09   266.83     0.24     0.32
 HUB     14.32     0.00    -0.02   266.83    -0.09   266.83     0.24     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     45.07    46.36    -1.29   267.36   377.80      9.88   511.50   501.57    35.74
 MEAN    41.45    43.80    -2.35   235.58   356.01      9.88   511.50   501.57    35.74
 HUB     36.70    37.84    -1.14   198.79   332.79      9.88   511.50   501.57    35.74

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     18.88   295.85    55.10   290.67  1101.48      0.27     2.16     1.89     8.34
 MEAN    16.57   300.78    78.52   290.35  1101.84      0.27     2.24     1.97     6.35
 HUB     13.89   321.63   138.43   290.31  1102.21      0.29     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    262.09   356.84   206.99     0.32  1042.01      0.92     0.83
 MEAN   230.08   327.53   151.55     0.30  1302.96      0.92     0.83     0.83     1.16
 HUB    192.82   295.36    54.39     0.27  1924.16      0.92     0.83

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.42     1.01     9.92   519.43     1.00   512.49   503.16    35.12
 MEAN    10.46     1.02     9.94   520.01     1.01   512.83   503.49    34.74
 HUB     10.54     1.03     9.95   521.38     1.01   513.17   504.41    34.34

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     10.73    35.46    31.50     3.96     0.93     0.11     1.40
 MEAN    15.13    27.56    23.50     4.06     0.89     0.15     1.62
 HUB     25.49    10.61     6.50     4.11     0.89     0.22     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.908       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   328.5881    78.9631   318.9592  1100.6172     0.2985    -0.1627     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.4706     9.8530   511.7008   504.0583    36.0052    13.9048    32.4000    18.4952

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   326.5514    73.2359   318.2331  1100.7242     0.2967    -0.1723     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4548     9.8446   511.8005   504.0273   432.2457     0.0393     0.0983

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   324.7574     0.0000   324.7574  1100.8104     0.2950    -0.0702     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.8096   511.8821   504.0658     0.0000     0.0600     0.1230    -0.2373

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.5470    10.4097     1.0121   520.2478     3.1245   398.6317     3.0902

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  19696.420       0.287      55.059  473683.656   0.443066E-02

Melt Ratio at Stator LE, Throat, TE
0.90365E+00 0.94636E+00 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-5.205   EfDer =  0.846    SH =  0.478657E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.466    1590.744      10.410     520.247       1.000       1.000       0.980
 W Kg/sec =  22.484  Wdry =  49.229  WH2O = 0.237  lbm/sec   H2O =   4.019g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     69.957    1588.375       1.375       0.252      53.504      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  56741.887   38739.945       2.481     509.668     205.391     384.739       1.873

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   267.19    -0.09   267.19     0.24     0.33   253.93
 MEAN   15.91     0.00    -0.02   267.19    -0.09   267.19     0.24     0.31
 HUB    13.07     0.00    -0.02   267.19    -0.09   267.19     0.24     0.29

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    43.60    47.36    -3.76   254.32   368.93    10.00   514.59   504.04    36.10
 MEAN   39.59    44.80    -5.21   220.90   346.74    10.00   514.59   504.04    36.10
 HUB    34.19    38.84    -4.65   181.44   323.02    10.00   514.59   504.04    36.10

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   293.95    39.45   291.29  1104.05     0.27     2.05     1.78     7.43
 MEAN   15.50   297.46    61.81   290.97  1104.46     0.27     2.13     1.86     5.75
 HUB    12.59   314.66   119.81   290.96  1104.86     0.28     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   249.04   358.86   209.59     0.33   709.50     0.92     0.77
 MEAN  215.14   328.89   153.32     0.30   959.41     0.92     0.77     0.77     1.12
 HUB   174.77   296.10    54.96     0.27  1509.62     0.92     0.77

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.50     1.01    10.00   521.81     1.00   514.96   505.43    36.70
 MEAN   10.53     1.01    10.02   522.36     1.00   515.35   505.72    36.25
 HUB    10.60     1.02    10.03   523.57     1.01   515.72   506.51    35.79

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     7.71    35.73    31.50     4.23     0.93     0.07     1.40
 MEAN   11.99    27.79    23.50     4.29     0.88     0.11     1.64
 HUB    22.38    10.70     6.50     4.20     0.88     0.17     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.846       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   338.0267    62.9457   332.1143  1102.4866     0.3066    -0.2713     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.5322     9.8786   513.5294   506.5569    38.4497    10.7320    33.0000    22.2680
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   346.3118    79.0806   337.1619  1102.0038     0.3143    -0.3924     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4940     9.8113   513.0814   506.7212   410.5396     0.0927     0.0697

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   337.2417     0.0000   337.2417  1102.5283     0.3059    -0.0868     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.8219   513.5729   506.7130     0.0000     0.0600     0.1411    -0.3722

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.3430    10.4685     1.0056   522.5774     2.3301   494.6276     3.8343

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  14715.017       0.237      41.134  504882.031   0.508304E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.0435   Tt4 =   522.5774   T1  =   500.8113

   OVERALL EXIT CONDITIONS; ALL          5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    137249.08    383.6602     76.5209      1.1212      0.7304      6.7293     1.0435     37.3740
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5µm, 4 g/m^3, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 10% 39000 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.608   EfDer =  0.953    SH =  0.992095E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     26.451    2420.336       4.265     457.721       1.000       1.000       0.980
  W Kg/sec =  12.023  Wdry =  26.425  WH2O = 0.026  lbm/sec   H2O =   0.394g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     85.650    2576.464       1.380       0.249      53.380      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64152.555   20746.836       3.315     831.557     250.838     619.754       2.471

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   185.15    -0.06   185.15     0.18     0.46   463.83
 MEAN    17.06     0.00    -0.02   185.15    -0.06   185.15     0.18     0.39
 HUB     12.51     0.00    -0.02   185.15    -0.06   185.15     0.18     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.98    50.47    16.51   435.73   473.50      4.17   454.97   451.85    37.87
 MEAN    62.81    47.20    15.61   360.33   405.18      4.17   454.97   451.85    37.87
 HUB     54.99    38.62    16.37   264.23   322.70      4.17   454.97   451.85    37.87

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   390.17   301.44   247.72  1051.77      0.37     7.29     6.52    16.04
 MEAN    18.04   394.52   304.36   251.01  1048.67      0.38     7.43     6.80    12.53
 HUB     15.00   426.85   341.90   255.55  1044.87      0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    435.73   281.78   134.29     0.27  6220.07      0.92     0.87
 MEAN   380.95   262.43    76.58     0.25  5490.56      0.92     0.87     0.87     1.77
 HUB    316.82   256.78    25.08     0.25  5129.36      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.92     1.15     4.48   478.80     1.05   466.59   468.49    34.41
 MEAN     4.84     1.13     4.39   476.33     1.04   463.84   467.17    38.27
 HUB      4.80     1.13     4.29   475.11     1.04   460.49   467.01    43.60

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.59    28.46    24.20     4.26     0.93     0.58     1.80
 MEAN    50.49    16.97    12.70     4.27     0.95     0.53     2.22
 HUB     53.22    -5.61    -9.30     3.69     0.95     0.39     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.953       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   405.9364   303.7706   269.2726  1048.2499     0.3873    -0.0354     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8484     4.3782   463.5425   467.8000    40.1117    48.4451    35.4000   -13.0451

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   267.1325    65.3488   259.0161  1056.6517     0.2528     0.5190     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8361     4.6287   471.0272   466.4515   554.9116     0.0363     0.6121

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   266.0807     0.0000   266.0807  1056.6504     0.2518     0.4877     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.6075	471.0740	467.4357	0.0000	0.0600	0.0875	0.4736

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8126	4.8122	1.1284	476.7425	19.0240	167.1473	1.2957

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
118735.844	0.625	177.484	277492.250	0.190293E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =15.182 EfDer = 0.957 SH = 0.283381E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.451	2420.336	4.812	476.741	1.000	1.000	0.980

W Kg/sec = 12.023 Wdry = 26.376 WH2O = 0.075 lbm/sec H2O = 1.205g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
77.464	2524.596	1.378	0.250	53.440	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
59908.969	20731.762	2.600	590.487	227.120	468.502	2.063

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	243.48	-0.08	243.48	0.23	0.47	452.73
MEAN	18.08	0.00	-0.02	243.48	-0.08	243.48	0.23	0.43	
HUB	15.21	0.00	-0.02	243.48	-0.08	243.48	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.71	46.36	14.35	434.05	497.75	4.64	472.01	470.11	54.83
MEAN	57.48	42.30	15.18	381.84	452.93	4.64	472.01	470.11	54.83
HUB	52.85	37.84	15.01	321.26	403.17	4.64	472.01	470.11	54.83

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	358.85	251.21	256.26	1070.60	0.34	2.33	2.04	9.02
MEAN	18.01	358.19	247.55	258.88	1068.13	0.34	2.40	2.13	7.35
HUB	15.22	379.32	274.49	261.80	1065.71	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	431.30	313.21	180.09	0.29	5131.40	0.92	0.88		
MEAN	380.40	290.98	132.84	0.27	4459.90	0.92	0.88	0.88	1.72
HUB	321.53	265.99	47.04	0.25	4179.84	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.39	1.12	5.00	494.03	1.04	483.76	481.11	37.72
MEAN	5.31	1.10	4.92	491.77	1.03	481.53	480.02	40.81
HUB	5.28	1.10	4.85	490.83	1.03	479.35	479.98	44.09

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	44.43	35.10	31.50	3.60	0.93	0.55	1.40
MEAN	43.72	27.16	23.50	3.66	0.95	0.53	1.63
HUB	46.36	10.19	6.50	3.69	0.95	0.51	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.957	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	382.8207	248.2457	291.4202	1066.9484	0.3588	-0.1058	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3256	4.8789	480.5262	480.7886	42.6588	40.4259	30.6000	-9.8259

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	281.8147	59.7467	275.4085	1072.8628	0.2627	0.3739	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.3191	5.0738	485.8773	479.2697	491.5697	0.0259	0.4694

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	292.1463	0.0000	292.1463	1072.3136	0.2724	0.3600	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0397	485.4060	479.8379	0.0000	0.0600	0.0674	0.2905

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8297	5.3022	1.1018	492.2071	15.4676	187.9226	1.4568

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
97030.867	0.522	145.040	252081.109	0.326053E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.198 EfDer = 0.972 SH = 0.386383E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.451	2420.336	5.302	492.206	1.000	1.000	0.980

W Kg/sec = 12.023 Wdry = 26.349 WH2O = 0.102 lbm/sec H2O = 1.753g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
71.437	2484.619	1.377	0.251	53.474	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56169.387	20723.295	2.603	545.479	209.595	424.468	2.025

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	247.12	-0.09	247.12	0.23	0.46	435.15
MEAN	17.74	0.00	-0.02	247.12	-0.09	247.12	0.23	0.42	
HUB	15.05	0.00	-0.02	247.12	-0.09	247.12	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.76	46.36	13.40	423.91	490.75	5.11	487.35	480.80	42.80
MEAN	56.60	43.40	13.20	374.66	448.89	5.11	487.35	480.80	42.80
HUB	52.15	38.84	13.31	317.88	402.70	5.11	487.35	480.80	42.80

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	350.65	235.24	260.03	1086.10	0.32	2.26	1.98	8.75
MEAN	17.51	352.00	234.69	262.34	1084.00	0.32	2.34	2.07	6.78
HUB	14.85	375.11	265.59	264.90	1081.93	0.35	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	418.42	318.07	183.17	0.29	4661.85	0.92	0.89		
MEAN	369.76	295.07	135.07	0.27	4110.21	0.92	0.89	0.89	1.67
HUB	313.65	269.23	48.06	0.25	3945.26	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.87	1.11	5.47	507.86	1.03	498.09	490.09	31.72
MEAN	5.80	1.09	5.40	506.01	1.03	496.16	489.32	33.79
HUB	5.78	1.09	5.33	505.45	1.03	494.27	489.54	35.94

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	42.14	35.16	31.50	3.66	0.93	0.52	1.40
MEAN	41.82	27.24	23.50	3.74	0.94	0.50	1.62
HUB	45.07	10.28	6.50	3.78	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.972	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	377.8096	236.2348	294.8444	1082.7828	0.3489	-0.1137	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.8140	5.3519	495.1034	490.1216	35.3312	38.7024	31.5000	-7.2024

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	289.9989	63.2613	283.0148	1087.8546	0.2666	0.3235	2.3726

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8098     5.5343   499.7613   488.7633   451.3937     0.0201     0.4442

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   294.9426     0.0000   294.9426  1087.5857     0.2712     0.3456     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5116   499.5331   489.3123     0.0000     0.0600     0.0538     0.2694

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8508     5.7957     1.0931   506.4398    14.2350   193.1359     1.4972

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  89620.492       0.512     133.963  250575.719   0.446908E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =11.612   EfDer =  0.983    SH =  0.529753E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.451    2420.336       5.796     506.439       1.000       1.000       0.980
 W Kg/sec =  12.023  Wdry =  26.311  WH2O = 0.140  lbm/sec   H2O =   2.552g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     66.293    2449.457       1.375       0.252      53.520      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  52880.898   20711.465       2.637     513.330     194.673     395.845       2.033

ROTOR LEADING EDGE CONDITIONS, STAGE   4

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    19.26     0.00    -0.02   247.22    -0.09   247.22     0.23     0.44   411.68
 MEAN   16.97     0.00    -0.02   247.22    -0.09   247.22     0.23     0.40
 HUB    14.32     0.00    -0.02   247.22    -0.09   247.22     0.23     0.36

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    58.72    46.36    12.36   406.80   476.10     5.60   501.60   490.42    36.38
 MEAN   55.41    43.80    11.61   358.45   435.50     5.60   501.60   490.42    36.38
 HUB    50.75    37.84    12.91   302.46   390.71     5.60   501.60   490.42    36.38

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    18.88   337.40   215.81   259.35  1099.88      0.31     2.16     1.89     8.34
 MEAN   16.57   338.71   215.34   261.45  1097.99      0.31     2.24     1.97     6.35
 HUB    13.89   360.39   245.61   263.73  1096.13      0.33     2.26     2.10     4.19

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   398.77   317.40   182.96     0.29  4076.08      0.92     0.90
 MEAN  350.06   294.12   134.73     0.27  3570.40      0.92     0.90      0.90     1.62
 HUB   293.38   268.02    47.76     0.24  3412.80      0.92     0.90

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.33     1.09     5.93   520.07     1.03   511.06   498.10    28.73
 MEAN    6.26     1.08     5.87   518.37     1.02   509.30   497.47    30.32
 HUB     6.24     1.08     5.80   517.85     1.02   507.57   497.69    31.96

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    39.76    35.20    31.50     3.70     0.93     0.49     1.40
 MEAN   39.48    27.26    23.50     3.76     0.94     0.48     1.62
 HUB    42.96    10.27     6.50     3.77     0.94     0.47     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.983       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   359.3188   216.5472   286.7356  1097.1287     0.3275    -0.0901     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.2707     5.8294   508.5552   498.1388    31.3306    37.0607    32.4000    -4.6607
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   287.8034    64.5459   280.4722  1101.0574     0.2614     0.2867     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2685     5.9827   512.2145   497.0464   432.2457     0.0154     0.4226

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   285.5491     0.0000   285.5491  1101.1454     0.2593     0.3322     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9760   512.3137   497.4740     0.0000     0.0600     0.0440     0.2702

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8653     6.2568     1.0796   518.7568    12.3239   208.0641     1.6129

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  77951.180       0.490     116.520  256520.156   0.605392E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.12045E-02 0.34728E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =10.154   EfDer =  0.991    SH =  0.689085E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.451    2420.336       6.257     518.749       1.000       1.000       0.980
 W Kg/sec =  12.023  Wdry =  26.269  WH2O = 0.182  lbm/sec   H2O =   3.506g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.149    2420.203       1.373       0.254      53.572      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50079.063   20698.256       2.790     509.668     182.685     384.739       2.106

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   235.81    -0.08   235.81     0.21     0.41   386.91
 MEAN    15.91     0.00    -0.02   235.81    -0.08   235.81     0.21     0.37
 HUB     13.07     0.00    -0.02   235.81    -0.08   235.81     0.21     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.65    47.36    11.29   386.94   453.20      6.06   514.37   498.28    31.77
 MEAN    54.95    44.80    10.15   336.11   410.64      6.06   514.37   498.28    31.77
 HUB     49.50    38.84    10.66   276.06   363.12      6.06   514.37   498.28    31.77

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   320.34   202.80   247.97  1112.14      0.29     2.05     1.78     7.43
 MEAN    15.50   318.81   197.83   250.00  1110.20      0.29     2.13     1.86     5.75
 HUB     12.59   334.78   220.20   252.18  1108.28      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    378.92   304.15   176.12     0.27  3639.72      0.92     0.91
 MEAN   327.33   281.55   129.50     0.25  3067.20      0.92     0.91     0.91     1.61
 HUB    265.92   256.29    45.72     0.23  2773.35      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.76     1.08     6.39   530.84     1.02   522.76   504.52    25.54
 MEAN     6.68     1.07     6.31   528.94     1.02   520.93   503.80    26.92
 HUB      6.64     1.06     6.24   527.96     1.02   519.13   503.74    28.35

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.28    35.38    31.50     3.88     0.93     0.49     1.40
 MEAN    38.35    27.38    23.50     3.88     0.94     0.46     1.64
 HUB     41.13    10.28     6.50     3.78     0.94     0.44     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.991       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   348.6160   201.4586   284.5128  1108.8124     0.3144    -0.1693     2.0437
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    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6826     6.2482   519.6703   504.5282    28.0358    35.3017    33.0000    -2.3017

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   290.6570    66.3718   282.9775  1111.8977     0.2614     0.1676     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6804     6.3751   522.5729   503.5459   410.5396     0.0259     0.3982

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   282.6824     0.0000   282.6824  1112.2209     0.2542     0.3216     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3879   522.8853   503.5757     0.0000     0.0600     0.0384     0.2014

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8825     6.6757     1.0669   529.1733    10.4985   227.5896     1.7643

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  66699.406       0.465      99.701  269179.313   0.728921E-02

Melt Ratio at Stator LE, Throat, TE
0.40480E+00 0.47199E+00 0.67328E+00
 trTOT =     1.1561   Tt4 =   529.1733   T1  =   457.7213

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    450037.81    672.7081     85.6497      1.5653      0.8338     15.6082      1.1561     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 38334 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.657   EfDer =  0.953    SH =  0.841283E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.534    2343.502       4.199     451.549       1.000       1.000       0.980
  W Kg/sec =  11.606  Wdry =  25.512  WH2O = 0.021  lbm/sec   H2O =   0.334g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.398    2511.672       1.381       0.249      53.376      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  61985.082   20028.389       3.405     831.557     244.219     619.754       2.538

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   178.90    -0.06   178.90     0.17     0.44   452.16
 MEAN    17.06     0.00    -0.02   178.90    -0.06   178.90     0.17     0.38
 HUB     12.51     0.00    -0.02   178.90    -0.06   178.90     0.17     0.30

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.02    50.47    16.55   421.90   458.32     4.11   448.98   447.09    42.41
 MEAN    62.86    47.20    15.66   348.90   392.14     4.11   448.98   447.09    42.41
 HUB     55.04    38.62    16.42   255.84   312.24     4.11   448.98   447.09    42.41

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   377.83   291.87   239.93  1044.21      0.36     7.29     6.52    16.04
 MEAN    18.04   381.98   294.76   242.95  1041.29      0.37     7.43     6.80    12.53
 HUB     15.00   413.07   331.00   247.11  1037.71      0.40     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    421.90   272.91   130.03     0.26  6022.51      0.92     0.87
 MEAN   368.85   254.00    74.09     0.24  5317.38      0.92     0.87     0.87     1.77
 HUB    306.76   248.30    24.24     0.24  4965.78      0.92     0.87

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.81     1.15     4.40   471.32     1.04   459.86   463.22    38.14
 MEAN     4.74     1.13     4.32   469.01     1.04   457.29   461.88    42.28
 HUB      4.70     1.12     4.22   467.85     1.04   454.16   461.64    47.98

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.58    28.46    24.20     4.26     0.93     0.58     1.80
 MEAN    50.50    16.96    12.70     4.26     0.95     0.53     2.22
 HUB     53.26    -5.60    -9.30     3.70     0.95     0.39     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.953       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   392.9966   294.1893   260.5744  1040.9033     0.3776    -0.0356     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.7440     4.3052   457.0092   462.4495    44.1894    48.4675    35.4000   -13.0675

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   259.0102    63.3618   251.1405  1048.8247     0.2470     0.5188     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.7329     4.5389   464.0140   461.2720   554.9116     0.0355     0.6113

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   257.9521     0.0000   257.9521  1048.8230     0.2459     0.4866     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.5187   464.0594   462.1246     0.0000     0.0600     0.0877     0.4725
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8124     4.7102     1.1217   469.3920    17.8457   167.0100     1.2947

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 111282.313       0.625     160.573  270409.125   0.155631E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.147   EfDer =  0.957    SH =  0.227505E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.534    2343.502       4.710     469.391       1.000       1.000       0.980
 W Kg/sec =  11.606  Wdry =  25.476  WH2O = 0.058  lbm/sec   H2O =   0.963g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.806    2463.518       1.379       0.250      53.422      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58082.918   20017.072       2.658     590.487     222.179     468.502       2.109

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   236.06    -0.08   236.06     0.22     0.46   441.78
 MEAN    18.08     0.00    -0.02   236.06    -0.08   236.06     0.22     0.42
 HUB     15.21     0.00    -0.02   236.06    -0.08   236.06     0.22     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.68    46.36    14.32   420.27   482.10      4.55   464.94   464.39    59.34
 MEAN    57.45    42.30    15.15   369.72   438.72      4.55   464.94   464.39    59.34
 HUB     52.81    37.84    14.97   311.06   390.56      4.55   464.94   464.39    59.34

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   347.72   242.62   249.09  1062.02     0.33     2.33     2.04     9.02
 MEAN    18.01   347.17   239.32   251.50  1059.70     0.33     2.40     2.13     7.35
 HUB     15.22   367.67   265.66   254.18  1057.42     0.35     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    417.61   304.41   174.99     0.29  4955.93     0.92     0.88
 MEAN   368.32   282.65   129.00     0.27  4311.64     0.92     0.88     0.88     1.71
 HUB    311.32   258.25    45.67     0.24  4045.31     0.92     0.88

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.25     1.11     4.88   485.59     1.03   475.93   475.26    41.22
 MEAN     5.18     1.10     4.81   483.48     1.03   473.85   474.17    44.50
 HUB      5.15     1.09     4.74   482.61     1.03   471.81   474.07    47.97

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     44.25    35.09    31.50     3.59     0.93     0.55     1.40
 MEAN    43.58    27.15    23.50     3.65     0.95     0.52     1.63
 HUB     46.26    10.19     6.50     3.69     0.95     0.51     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.957       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   371.0754   239.9933   283.0197  1058.5707     0.3505    -0.1064     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   5.1874     4.7707   472.8979   474.8678    46.4742    40.2971    30.6000    -9.6971

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   274.0819    58.1073   267.8515  1064.1393     0.2576     0.3708     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     5.1816     4.9514   477.8955   473.5490   491.5697     0.0250     0.4665

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   284.0584     0.0000   284.0584  1063.6130     0.2671     0.3573     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9196	477.4520	474.0528	0.0000	0.0600	0.0667	0.2873

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8304	5.1658	1.0967	483.8943	14.5052	188.2821	1.4596

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
90816.625	0.521	131.042	245843.156	0.260923E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.078 EfDer = 0.973 SH = 0.308302E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.534	2343.502	5.166	483.893	1.000	1.000	0.980

W Kg/sec = 11.606 Wdry = 25.455 WH2O = 0.079 lbm/sec H2O = 1.388g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.180	2426.321	1.378	0.251	53.448	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54632.195	20010.676	2.650	545.479	205.807	424.468	2.062

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	240.36	-0.08	240.36	0.23	0.45	424.94
MEAN	17.74	0.00	-0.02	240.36	-0.08	240.36	0.23	0.41	
HUB	15.05	0.00	-0.02	240.36	-0.08	240.36	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.65	46.36	13.29	410.45	475.72	4.99	479.29	474.89	46.73
MEAN	56.48	43.40	13.08	362.77	435.24	4.99	479.29	474.89	46.72
HUB	52.02	38.84	13.18	307.79	390.59	4.99	479.29	474.89	46.73

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	340.02	226.61	253.50	1076.65	0.32	2.26	1.98	8.75
MEAN	17.51	341.52	226.47	255.63	1074.67	0.32	2.34	2.07	6.78
HUB	14.85	364.10	256.92	257.99	1072.74	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	405.13	310.05	178.52	0.29	4490.81	0.92	0.89		
MEAN	358.02	287.50	131.55	0.27	3966.21	0.92	0.89	0.89	1.66
HUB	303.70	262.19	46.77	0.24	3816.53	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.69	1.10	5.32	498.53	1.03	489.32	484.07	34.93
MEAN	5.63	1.09	5.25	496.82	1.03	487.53	483.30	37.14
HUB	5.61	1.09	5.19	496.33	1.03	485.77	483.47	39.43

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.79	35.15	31.50	3.65	0.93	0.52	1.40
MEAN	41.54	27.23	23.50	3.73	0.94	0.50	1.62
HUB	44.88	10.28	6.50	3.78	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.973	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	366.6914	227.9581	287.2241	1073.5088	0.3416	-0.1148	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6396	5.2087	486.5204	484.0331	38.8323	38.4376	31.5000	-6.9376

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	282.8647	61.7050	276.0525	1078.2736	0.2623	0.3176	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6360	5.3767	490.8566	482.8466	451.3937	0.0193	0.4392

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   287.6350     0.0000   287.6350  1078.0142     0.2668     0.3411     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.3557   490.6411   483.3430     0.0000     0.0600     0.0526     0.2638

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8523     5.6229     1.0885   497.2272    13.3350   194.0667     1.5044

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  83735.945       0.510     120.825  244646.547   0.356428E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =11.414   EfDer =  0.984    SH =  0.421952E-02

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.534    2343.502       5.623     497.226       1.000       1.000       0.980
 W Kg/sec =  11.606  Wdry =  25.426  WH2O = 0.108  lbm/sec   H2O =   2.012g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     65.356    2393.570       1.376       0.252      53.485      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  51582.398   20001.648       2.676     513.330     191.797     395.845       2.064

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   241.15    -0.08   241.15     0.22     0.43   402.29
 MEAN    16.97     0.00    -0.02   241.15    -0.08   241.15     0.22     0.39
 HUB     14.32     0.00    -0.02   241.15    -0.08   241.15     0.22     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.53    46.36    12.17   393.88   461.92     5.43   492.61   484.33    40.10
 MEAN    55.21    43.80    11.41   347.07   422.69     5.43   492.61   484.33    40.10
 HUB     50.54    37.84    12.70   292.86   379.43     5.43   492.61   484.33    40.10

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     18.88   327.48   207.30   253.51  1089.66      0.30     2.16     1.89     8.34
 MEAN    16.57   329.01   207.37   255.43  1087.89      0.30     2.24     1.97     6.35
 HUB     13.89   350.27   237.42   257.54  1086.15      0.32     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    386.11   310.22   178.81     0.28  3915.49      0.92     0.90
 MEAN   338.95   287.33   131.58     0.26  3438.34      0.92     0.90     0.90     1.61
 HUB    284.06   261.73    46.65     0.24  3298.90      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.11     1.09     5.75   509.94     1.03   501.43   491.88    31.89
 MEAN     6.05     1.08     5.68   508.39     1.02   499.80   491.25    33.60
 HUB      6.03     1.07     5.62   507.94     1.02   498.20   491.45    35.36

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.27    35.20    31.50     3.70     0.93     0.49     1.40
 MEAN    39.07    27.25    23.50     3.75     0.94     0.47     1.62
 HUB     42.67    10.27     6.50     3.77     0.94     0.47     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.984       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   349.1985   208.5366   280.0929  1087.0554     0.3212    -0.0914     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.0609     5.6494   499.0841   491.8822    34.7291    36.6687    32.4000    -4.2687

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   281.4368    63.1180   274.2677  1090.7321     0.2580     0.2782     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.0591     5.7895   502.4747   490.9236   432.2457     0.0147     0.4158

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   279.2066     0.0000   279.2066  1090.8239     0.2560     0.3258     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.7835   502.5750   491.3500     0.0000     0.0600     0.0428     0.2625

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8667     6.0484     1.0757   508.7572    11.5320   209.6811     1.6254

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  72688.445       0.488     104.885  250689.453   0.483867E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.882   EfDer =  0.992    SH =  0.568423E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.534    2343.502       6.048     508.756       1.000       1.000       0.980
 W Kg/sec =  11.606  Wdry =  25.389  WH2O = 0.145  lbm/sec   H2O =   2.854g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     61.460    2366.292       1.374       0.253      53.533      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  48980.574   19989.967       2.823     509.668     180.524     384.739       2.131

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   230.63    -0.08   230.63     0.21     0.40   378.29
 MEAN   15.91     0.00    -0.02   230.63    -0.08   230.63     0.21     0.37
 HUB    13.07     0.00    -0.02   230.63    -0.08   230.63     0.21     0.32

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    58.39    47.36    11.03   374.66   440.02     5.87   504.55   492.44    36.55
 MEAN   54.68    44.80     9.88   325.44   398.94     5.87   504.55   492.44    36.55
 HUB    49.22    38.84    10.38   267.29   353.10     5.87   504.55   492.44    36.55

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   311.14   194.37   242.96  1101.24      0.28     2.05     1.78     7.43
 MEAN   15.50   309.99   190.12   244.84  1099.42      0.28     2.13     1.86     5.75
 HUB    12.59   325.86   212.73   246.85  1097.63      0.30     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   366.89   297.98   172.52     0.27  3488.47      0.92     0.91
 MEAN  316.94   275.74   126.82     0.25  2947.65      0.92     0.91     0.91     1.60
 HUB   257.48   250.87    44.75     0.23  2679.29      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.51     1.08     6.16   520.03     1.02   512.38   498.89    30.33
 MEAN    6.43     1.06     6.10   518.29     1.02   510.69   498.19    31.93
 HUB     6.40     1.06     6.03   517.42     1.02   509.02   498.14    33.58

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    38.66    35.38    31.50     3.88     0.93     0.48     1.40
 MEAN   37.83    27.38    23.50     3.88     0.94     0.45     1.64
 HUB    40.75    10.27     6.50     3.77     0.94     0.44     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.992       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   339.2713   193.6047   278.6077  1098.0702     0.3090    -0.1713     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.4399     6.0347   509.4888   498.9575    33.4152    34.7955    33.0000    -1.7955
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   284.8503    65.0458   277.3243  1100.9449     0.2587     0.1588     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     6.4382     6.1505   512.1700   498.1312   410.5396     0.0250     0.3896

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   277.1155     0.0000   277.1155  1101.2870     0.2516     0.3129     0.5109

Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     6.1615   512.5027   498.3821     0.0000     0.0600     0.0377     0.1900

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.8782     6.4337     1.0637   518.5642     9.8233   229.6357     1.7801

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  62206.523       0.462      89.760  263304.094   0.636345E-02

Melt Ratio at Stator LE, Throat, TE
0.12293E-01 0.27082E-01 0.10431E+00
 trTOT =     1.1484   Tt4 =   518.5642   T1  =   451.5491

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    420729.84    607.0848     83.3982      1.5321      0.8343     15.6573     1.1484     37.3740
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*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 37357 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.660   EfDer =  0.953    SH =  0.757620E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     26.153    2313.630       4.337     449.660       1.000       1.000       0.980
  W Kg/sec =  11.888  Wdry =  26.133  WH2O = 0.020  lbm/sec   H2O =   0.312g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.531    2484.860       1.381       0.249      53.373      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  61189.215   20514.600       3.441     831.557     241.667     619.754       2.564

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   176.60    -0.06   176.60     0.17     0.44   447.34
 MEAN    17.06     0.00    -0.02   176.60    -0.06   176.60     0.17     0.38
 HUB     12.51     0.00    -0.02   176.60    -0.06   176.60     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.03    50.47    16.56   416.52   452.47     4.25   447.16   445.64    43.21
 MEAN    62.86    47.20    15.66   344.45   387.14     4.25   447.16   445.64    43.21
 HUB     55.05    38.62    16.43   252.58   308.25     4.25   447.16   445.64    43.21

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   373.07   288.05   237.09  1041.82      0.36     7.29     6.52    16.04
 MEAN    18.04   377.18   290.97   240.00  1038.97      0.36     7.43     6.80    12.53
 HUB     15.00   407.87   326.83   244.02  1035.48      0.39     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    416.52   269.66   128.48     0.26  5943.69      0.92     0.87
 MEAN   364.15   250.91    73.18     0.24  5249.01      0.92     0.87     0.87     1.77
 HUB    302.85   245.20    23.97     0.24  4903.17      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.95     1.14     4.54   468.93     1.04   457.75   461.57    38.87
 MEAN     4.88     1.12     4.46   466.68     1.04   455.26   460.21    43.03
 HUB      4.84     1.12     4.36   465.56     1.04   452.20   459.92    48.73

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.54    28.45    24.20     4.25     0.93     0.58     1.80
 MEAN    50.48    16.96    12.70     4.26     0.95     0.53     2.22
 HUB     53.25    -5.61    -9.30     3.69     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.953       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   388.0522   290.4065   257.3879  1038.6014     0.3736    -0.0357     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.8873     4.4439   454.9754   460.7486    44.9372    48.4494    35.4000   -13.0494

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   256.0486    62.6373   248.2689  1046.3334     0.2447     0.5184     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.8763     4.6799   461.7953   459.6719   554.9116     0.0351     0.6105

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   254.9843     0.0000   254.9843  1046.3345     0.2437     0.4859     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.6594   461.8402   460.4531     0.0000     0.0600     0.0876     0.4718
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8126     4.8532     1.1190   467.0529    17.3954   167.0345     1.2948

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 108435.391       0.625     160.258  277753.188   0.138686E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.114   EfDer =  0.957    SH =  0.201867E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.153    2313.630       4.853     467.052       1.000       1.000       0.980
 W Kg/sec =  11.888  Wdry =  26.100  WH2O = 0.053  lbm/sec   H2O =   0.886g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.168    2438.198       1.379       0.250      53.414      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57415.754   20504.412       2.681     590.487     220.277     468.502       2.127

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   233.35    -0.08   233.35     0.22     0.45   437.24
 MEAN    18.08     0.00    -0.02   233.35    -0.08   233.35     0.22     0.41
 HUB     15.21     0.00    -0.02   233.35    -0.08   233.35     0.22     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.65    46.36    14.29   414.91   476.10     4.69   462.70   462.54    60.18
 MEAN    57.41    42.30    15.11   365.00   433.29     4.69   462.70   462.54    60.18
 HUB     52.78    37.84    14.94   307.09   385.76     4.69   462.70   462.54    60.18

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950       77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   343.44   239.16   246.48  1059.24      0.32     2.33     2.04     9.02
 MEAN    18.01   342.95   236.03   248.81  1056.98      0.32     2.40     2.13     7.35
 HUB     15.22   363.25   262.20   251.40  1054.75      0.34     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    412.28   301.21   173.13     0.28  4885.25      0.92     0.88
 MEAN   363.62   279.62   127.59     0.26  4252.36      0.92     0.88     0.88     1.71
 HUB    307.36   255.42    45.16     0.24  3992.70      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.40     1.11     5.02   482.83     1.03   473.39   473.39    42.03
 MEAN     5.32     1.10     4.95   480.78     1.03   471.38   472.28    45.32
 HUB      5.29     1.09     4.88   479.95     1.03   469.39   472.15    48.80

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     44.14    35.08    31.50     3.58     0.93     0.55     1.40
 MEAN    43.49    27.15    23.50     3.65     0.95     0.52     1.63
 HUB     46.20    10.18     6.50     3.68     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.957       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   366.6098   236.6937   279.9622  1055.8656     0.3472    -0.1067     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3341     4.9133   470.4428   472.9457    47.3203    40.2128    30.6000    -9.6128

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   271.2811    57.5135   265.1144  1061.2966     0.2556     0.3690     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3285     5.0952   475.3033   471.7333   491.5697     0.0246     0.4647

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   281.1255     0.0000   281.1255  1060.7803     0.2650     0.3558     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0630	474.8698	472.2004	0.0000	0.0600	0.0662	0.2854

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8309	5.3125	1.0946	481.1852	14.1349	188.5487	1.4616

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
88424.859	0.520	130.684	252607.484	0.231261E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.011 EfDer = 0.974 SH = 0.272999E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.153	2313.630	5.312	481.184	1.000	1.000	0.980

W Kg/sec = 11.888 Wdry = 26.081 WH2O = 0.071 lbm/sec H2O = 1.272g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.700	2402.127	1.378	0.250	53.437	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54074.359	20498.648	2.669	545.479	204.355	424.468	2.077

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	237.91	-0.08	237.91	0.22	0.44	420.71
MEAN	17.74	0.00	-0.02	237.91	-0.08	237.91	0.22	0.40	
HUB	15.05	0.00	-0.02	237.91	-0.08	237.91	0.22	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.59	46.36	13.23	405.22	469.97	5.13	476.67	472.98	47.65
MEAN	56.41	43.40	13.01	358.14	430.03	5.13	476.67	472.98	47.65
HUB	51.95	38.84	13.11	303.86	385.98	5.13	476.67	472.98	47.65

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	335.96	223.15	251.15	1073.52	0.31	2.26	1.98	8.75
MEAN	17.51	337.51	223.16	253.21	1071.60	0.31	2.34	2.07	6.78
HUB	14.85	359.92	253.51	255.49	1069.71	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	399.97	307.15	176.82	0.29	4422.24	0.92	0.89		
MEAN	353.46	284.77	130.30	0.27	3908.19	0.92	0.89	0.89	1.66
HUB	299.82	259.65	46.32	0.24	3765.83	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.84	1.10	5.46	495.43	1.03	486.42	482.13	35.78
MEAN	5.78	1.09	5.40	493.77	1.03	484.69	481.35	38.01
HUB	5.76	1.08	5.33	493.32	1.03	482.98	481.51	40.32

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.62	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	41.39	27.23	23.50	3.73	0.94	0.50	1.62
HUB	44.78	10.28	6.50	3.78	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.974	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	362.4637	224.6231	284.4722	1070.4534	0.3386	-0.1152	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7893	5.3541	483.6986	482.0590	39.7382	38.2951	31.5000	-6.7951

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	280.3048	61.1466	273.5542	1075.0938	0.2607	0.3146	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7858	5.5227	487.9088	480.9637	451.3937	0.0189	0.4366

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	285.0096	0.0000	285.0096	1074.8395	0.2652	0.3388	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5016	487.6978	481.4278	0.0000	0.0600	0.0520	0.2609

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8531	5.7727	1.0866	494.1719	12.9888	194.5771	1.5083

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
81469.008	0.509	120.404	251493.000	0.315454E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.313 EfDer = 0.985 SH = 0.373237E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.153	2313.630	5.773	494.171	1.000	1.000	0.980

W Kg/sec = 11.888 Wdry = 26.055 WH2O = 0.098 lbm/sec H2O = 1.839g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.003	2370.353	1.377	0.251	53.469	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51115.332	20490.502	2.692	513.330	190.705	395.845	2.076

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	238.97	-0.08	238.97	0.22	0.42	398.39
MEAN	16.97	0.00	-0.02	238.97	-0.08	238.97	0.22	0.39	
HUB	14.32	0.00	-0.02	238.97	-0.08	238.97	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.43	46.36	12.07	388.86	456.49	5.58	489.63	482.35	41.10
MEAN	55.11	43.80	11.31	342.64	417.81	5.58	489.63	482.35	41.10
HUB	50.43	37.84	12.59	289.12	375.16	5.58	489.63	482.35	41.10

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	323.70	203.89	251.42	1086.23	0.30	2.16	1.89	8.34
MEAN	16.57	325.32	204.16	253.29	1084.51	0.30	2.24	1.97	6.35
HUB	13.89	346.49	234.24	255.32	1082.81	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	381.19	307.65	177.31	0.28	3850.94	0.92	0.90		
MEAN	334.63	284.92	130.47	0.26	3385.07	0.92	0.90	0.90	1.61
HUB	280.44	259.47	46.20	0.24	3254.83	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.26	1.08	5.89	506.54	1.03	498.20	489.88	32.80
MEAN	6.20	1.07	5.83	505.04	1.02	496.62	489.24	34.53
HUB	6.18	1.07	5.77	504.62	1.02	495.07	489.42	36.31

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	39.04	35.19	31.50	3.69	0.93	0.48	1.40
MEAN	38.87	27.25	23.50	3.75	0.94	0.47	1.62
HUB	42.53	10.26	6.50	3.76	0.94	0.47	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.985	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	345.3652	205.3054	277.7171	1083.6884	0.3187	-0.0918	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.2127	5.7971	495.9216	489.8461	35.6912	36.4741	32.4000	-4.0741

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	279.1756	62.6109	272.0641	1087.2627	0.2568	0.2742	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2110     5.9371   499.2066   488.9585   432.2457     0.0144     0.4124

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   276.9509     0.0000   276.9509  1087.3538     0.2547     0.3226     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9312   499.3059   489.3585     0.0000     0.0600     0.0423     0.2588

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8676     6.2003     1.0741   505.3983    11.2285   210.4799     1.6316

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  70664.789       0.486     104.436  257804.938   0.427863E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.753   EfDer =  0.993    SH =  0.502332E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.153    2313.630       6.200     505.397       1.000       1.000       0.980
 W Kg/sec =  11.888  Wdry =  26.021  WH2O = 0.131  lbm/sec   H2O =   2.604g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     61.204    2343.879       1.375       0.252      53.511      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  48586.098   20479.979       2.836     509.668     179.704     384.739       2.141

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   228.78    -0.08   228.78     0.21     0.40   374.71
 MEAN    15.91     0.00    -0.02   228.78    -0.08   228.78     0.21     0.36
 HUB     13.07     0.00    -0.02   228.78    -0.08   228.78     0.21     0.32

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.27    47.36    10.91   369.89   434.98     6.02   501.25   490.38    37.59
 MEAN    54.55    44.80     9.75   321.29   394.48     6.02   501.25   490.38    37.59
 HUB     49.08    38.84    10.24   263.89   349.31     6.02   501.25   490.38    37.59

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   307.62   190.95   241.19  1097.55     0.28     2.05     1.78     7.43
 MEAN    15.50   306.65   187.03   243.01  1095.79     0.28     2.13     1.86     5.75
 HUB     12.59   322.53   209.82   244.95  1094.04     0.29     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    362.21   295.81   171.26     0.27  3427.09     0.92     0.91
 MEAN   312.90   273.67   125.87     0.25  2899.76     0.92     0.91     0.91     1.59
 HUB    254.20   248.94    44.37     0.23  2642.70     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.66     1.07     6.31   516.36     1.02   508.86   496.81    31.32
 MEAN     6.59     1.06     6.24   514.67     1.02   507.22   496.10    32.94
 HUB      6.55     1.06     6.18   513.85     1.02   505.61   496.04    34.63

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.37    35.38    31.50     3.88     0.93     0.48     1.40
 MEAN    37.58    27.38    23.50     3.88     0.94     0.45     1.64
 HUB     40.58    10.27     6.50     3.77     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   335.7433   190.4587   276.4942  1094.4520     0.3068    -0.1723     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.5929     6.1835   506.0394   496.8408    34.4776    34.5604    33.0000    -1.5604
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   282.7931    64.5760   275.3214  1097.2427     0.2577     0.1538     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.5913     6.2989   508.6317   496.0875   410.5396     0.0246     0.3857

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   275.1285     0.0000   275.1285  1097.5933     0.2507     0.3089     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3099   508.9710   496.4171     0.0000     0.0600     0.0374     0.1848

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8775     6.5867     1.0623   514.9584     9.5619   230.7638     1.7889

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  60426.930       0.461      89.306  270861.156   0.568061E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.58309E-03
 trTOT =     1.1452   Tt4 =   514.9584   T1  =   449.6602

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    409420.97    605.0885     82.5309      1.5187      0.8349     15.6595      1.1452     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 34281 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.685   EfDer =  0.953    SH =  0.755954E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     28.139    2245.949       4.829     451.595       1.000       1.000       0.980
  W Kg/sec =  12.791  Wdry =  28.118  WH2O = 0.021  lbm/sec   H2O =   0.345g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     79.933    2407.002       1.381       0.249      53.373      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59335.121   22073.090       3.553     831.557     234.065     619.754       2.648

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   171.25    -0.06   171.25     0.17     0.43   433.32
 MEAN    17.06     0.00    -0.02   171.25    -0.06   171.25     0.17     0.36
 HUB     12.51     0.00    -0.02   171.25    -0.06   171.25     0.17     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.05    50.47    16.58   404.34   439.16      4.74   449.24   447.61    43.33
 MEAN    62.88    47.20    15.68   334.37   375.73      4.74   449.24   447.61    43.33
 HUB     55.07    38.62    16.45   245.19   299.12      4.74   449.24   447.61    43.33

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   362.29   279.47   230.54  1043.44      0.35     7.29     6.52    16.04
 MEAN    18.04   366.26   282.43   233.19  1040.77      0.35     7.43     6.80    12.53
 HUB     15.00   395.90   317.24   236.84  1037.50      0.38     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    404.34   262.19   124.87     0.25  5766.61      0.92     0.87
 MEAN   353.50   243.78    71.07     0.23  5094.85      0.92     0.87     0.87     1.77
 HUB    293.99   237.98    23.25     0.23  4759.38      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.47     1.13     5.04   469.74     1.04   459.20   462.70    39.38
 MEAN     5.39     1.12     4.96   467.63     1.04   456.86   461.39    43.29
 HUB      5.35     1.11     4.85   466.57     1.03   453.99   461.09    48.60

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.48    28.44    24.20     4.24     0.93     0.58     1.80
 MEAN    50.45    16.95    12.70     4.25     0.95     0.53     2.22
 HUB     53.26    -5.61    -9.30     3.69     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.953       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   376.7956   281.8773   250.0402  1040.4199     0.3622    -0.0360     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.4015     4.9395   456.5926   461.9023    45.1266    48.4253    35.4000   -13.0253

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   249.3058    60.9878   241.7309  1047.6678     0.2380     0.5174     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3905     5.1849   462.9946   460.9288   554.9116     0.0339     0.6087

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   248.2224     0.0000   248.2224  1047.6738     0.2369     0.4842     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.1632   463.0389   461.6404     0.0000     0.0600     0.0874     0.4699
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8124     5.3660     1.1113   467.9787    16.3860   166.9854     1.2945

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 102150.547       0.625     162.439  297596.563   0.133465E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.035   EfDer =  0.958    SH =  0.191467E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     28.139    2245.949       5.366     467.978       1.000       1.000       0.980
 W Kg/sec =  12.791  Wdry =  28.086  WH2O = 0.054  lbm/sec   H2O =   0.928g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.221    2364.531       1.379       0.250      53.410      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  55906.008   22063.020       2.752     590.487     214.563     468.502       2.184

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   227.22    -0.08   227.22     0.22     0.44   424.02
 MEAN    18.08     0.00    -0.02   227.22    -0.08   227.22     0.22     0.40
 HUB     15.21     0.00    -0.02   227.22    -0.08   227.22     0.22     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.58    46.36    14.22   402.77   462.51     5.20   463.85   463.58    59.96
 MEAN    57.33    42.30    15.03   354.33   420.99     5.20   463.85   463.58    59.96
 HUB     52.69    37.84    14.85   298.11   374.89     5.20   463.85   463.58    59.96

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   333.78   231.25   240.70  1059.76      0.31     2.33     2.04     9.02
 MEAN    18.01   333.43   228.50   242.82  1057.66      0.32     2.40     2.13     7.35
 HUB     15.22   353.30   254.37   245.18  1055.58      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    400.22   294.09   168.98     0.28  4723.67      0.92     0.88
 MEAN   352.99   272.87   124.49     0.26  4116.69      0.92     0.88     0.88     1.70
 HUB    298.36   249.10    43.99     0.24  3873.48      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.93     1.10     5.54   482.79     1.03   473.88   473.94    42.94
 MEAN     5.85     1.09     5.47   480.89     1.03   471.99   472.88    46.07
 HUB      5.82     1.09     5.39   480.12     1.03   470.14   472.75    49.35

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.85    35.07    31.50     3.57     0.93     0.54     1.40
 MEAN    43.26    27.14    23.50     3.64     0.95     0.52     1.63
 HUB     46.05    10.17     6.50     3.67     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.958       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   356.5220   229.1415   273.1338  1056.6024     0.3374    -0.1075     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8641     5.4259   471.1030   473.5016    48.0000    39.9945    30.6000    -9.3945

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   265.1061    56.2044   259.0798  1061.6768     0.2497     0.3642     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8587     5.6136   475.6462   472.4136   491.5697     0.0235     0.4602

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   274.6439     0.0000   274.6439  1061.1901     0.2588     0.3518     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5801	475.2355	472.8376	0.0000	0.0600	0.0650	0.2806

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8321	5.8421	1.0887	481.2646	13.2885	189.2057	1.4667

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
83110.109	0.519	132.161	271011.406	0.217811E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.831 EfDer = 0.975 SH = 0.254969E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
28.139	2245.949	5.842	481.264	1.000	1.000	0.980

W Kg/sec = 12.791 Wdry = 28.068 WH2O = 0.072 lbm/sec H2O = 1.308g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.202	2331.665	1.378	0.250	53.431	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52851.129	22057.486	2.728	545.479	199.943	424.468	2.123

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	232.53	-0.08	232.53	0.22	0.43	408.36
MEAN	17.74	0.00	-0.02	232.53	-0.08	232.53	0.22	0.39	
HUB	15.05	0.00	-0.02	232.53	-0.08	232.53	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.42	46.36	13.06	393.36	457.02	5.65	476.95	473.55	48.43
MEAN	56.23	43.40	12.83	347.67	418.33	5.65	476.95	473.55	48.43
HUB	51.76	38.84	12.92	294.97	375.67	5.65	476.95	473.55	48.43

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	326.83	215.03	246.12	1073.14	0.30	2.26	1.98	8.75
MEAN	17.51	328.59	215.56	248.00	1071.36	0.31	2.34	2.07	6.78
HUB	14.85	350.61	245.74	250.08	1069.60	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	388.27	300.98	173.23	0.28	4261.44	0.92	0.89		
MEAN	343.12	278.89	127.56	0.26	3775.08	0.92	0.89	0.89	1.64
HUB	291.05	254.16	45.32	0.24	3650.38	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.39	1.09	5.99	494.60	1.03	486.07	482.31	37.08
MEAN	6.32	1.08	5.93	493.07	1.02	484.46	481.56	39.22
HUB	6.31	1.08	5.86	492.68	1.02	482.87	481.71	41.43

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.14	35.14	31.50	3.64	0.93	0.51	1.40
MEAN	41.00	27.22	23.50	3.72	0.94	0.49	1.62
HUB	44.50	10.27	6.50	3.77	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.975	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	353.0775	216.9713	278.5448	1070.2582	0.3299	-0.1168	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3335	5.8804	483.5072	482.2227	40.9273	37.9167	31.5000	-6.4167

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	274.8743	59.9620	268.2544	1074.5774	0.2558	0.3063	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3303	6.0529	487.4243	481.2418	451.3937	0.0178	0.4296

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	279.4295	0.0000	279.4295	1074.3367	0.2601	0.3325	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.0311	487.2238	481.6616	0.0000	0.0600	0.0504	0.2531

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8550	6.3169	1.0813	493.4503	12.1876	195.9473	1.5190

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
76403.484	0.507	121.496	270231.750	0.292184E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.036 EfDer = 0.986 SH = 0.342643E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
28.139	2245.949	6.317	493.449	1.000	1.000	0.980

W Kg/sec = 12.791 Wdry = 28.043 WH2O = 0.096 lbm/sec H2O = 1.852g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
63.869	2302.695	1.377	0.251	53.459	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50132.250	22049.828	2.740	513.330	187.345	395.845	2.113

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	234.38	-0.08	234.38	0.22	0.41	387.01
MEAN	16.97	0.00	-0.02	234.38	-0.08	234.38	0.22	0.38	
HUB	14.32	0.00	-0.02	234.38	-0.08	234.38	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.17	46.36	11.81	377.49	444.40	6.11	489.08	482.50	42.28
MEAN	54.84	43.80	11.04	332.62	406.97	6.11	489.08	482.50	42.28
HUB	50.14	37.84	12.30	280.67	365.72	6.11	489.08	482.50	42.28

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	315.31	195.76	247.18	1085.03	0.29	2.16	1.89	8.34
MEAN	16.57	317.20	196.67	248.87	1083.44	0.29	2.24	1.97	6.35
HUB	13.89	338.15	226.90	250.73	1081.87	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	370.04	302.44	174.28	0.28	3697.50	0.92	0.90		
MEAN	324.84	279.94	128.17	0.26	3260.98	0.92	0.90	0.90	1.59
HUB	272.24	254.80	45.34	0.24	3152.76	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.82	1.08	6.44	504.98	1.02	497.07	489.69	34.26
MEAN	6.76	1.07	6.37	503.62	1.02	495.61	489.09	35.93
HUB	6.74	1.07	6.31	503.28	1.02	494.18	489.27	37.65

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.38	35.19	31.50	3.69	0.93	0.48	1.40
MEAN	38.32	27.25	23.50	3.75	0.94	0.46	1.62
HUB	42.14	10.25	6.50	3.75	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.986	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	336.9770	197.7778	272.8323	1082.6479	0.3113	-0.0934	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7680	6.3352	494.9324	489.6609	37.1029	35.9386	32.4000	-3.5386

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	274.6102	61.5870	267.6150	1085.9529	0.2529	0.2627	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.7666     6.4769   497.9662   488.8722   432.2457     0.0136     0.4033

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   272.3922     0.0000   272.3922  1086.0437     0.2508     0.3138     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.4710   498.0635   489.2325     0.0000     0.0600     0.0409     0.2482

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8697     6.7557     1.0695   503.9629    10.5145   212.7201     1.6490

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  66108.844       0.483     105.126  277392.844   0.389901E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.392   EfDer =  0.994    SH =  0.454115E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     28.139    2245.949       6.756     503.962       1.000       1.000       0.980
 W Kg/sec =  12.791  Wdry =  28.012  WH2O = 0.128  lbm/sec   H2O =   2.575g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     60.354    2278.551       1.376       0.252      53.496      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  47797.914   22040.063       2.877     509.668     177.157     384.739       2.172

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   225.07    -0.08   225.07     0.21     0.39   364.27
 MEAN   15.91     0.00    -0.02   225.07    -0.08   225.07     0.21     0.35
 HUB    13.07     0.00    -0.02   225.07    -0.08   225.07     0.21     0.31

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    57.93    47.36    10.57   359.06   423.84      6.56   499.94   490.15    38.99
 MEAN   54.19    44.80     9.39   311.89   384.68      6.56   499.94   490.15    38.99
 HUB    48.71    38.84     9.87   256.17   341.05      6.56   499.94   490.15    38.99

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   299.93   182.80   237.78  1095.64      0.27     2.05     1.78     7.43
 MEAN   15.50   299.39   179.72   239.45  1094.00      0.27     2.13     1.86     5.75
 HUB    12.59   315.29   203.03   241.22  1092.39      0.29     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   351.62   291.62   168.82     0.27  3280.83      0.92     0.91
 MEAN  303.75   269.66   124.02     0.25  2786.51      0.92     0.91     0.91     1.58
 HUB   246.76   245.16    43.73     0.22  2557.14      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     7.22     1.07     6.86   514.16     1.02   507.03   496.30    32.88
 MEAN    7.15     1.06     6.79   512.62     1.02   505.52   495.62    34.47
 HUB     7.12     1.05     6.72   511.91     1.02   504.03   495.58    36.10

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    37.55    35.37    31.50     3.87     0.93     0.46     1.40
 MEAN   36.89    27.38    23.50     3.88     0.94     0.44     1.64
 HUB    40.09    10.28     6.50     3.78     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   328.1533   183.0186   272.3762  1092.7103     0.3003    -0.1750     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.1561     6.7293   504.3654   496.3189    36.0309    33.8985    33.0000    -0.8985
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   278.8824    63.6830   271.5140  1095.2671     0.2546     0.1383     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.1548     6.8446   506.7362   495.6577   410.5396     0.0237     0.3749

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   271.3306     0.0000   271.3306  1095.6100     0.2477     0.2975     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.8563   507.0663   495.9516     0.0000     0.0600     0.0369     0.1699

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8788     7.1499     1.0584   512.8986     8.9374   233.9989     1.8139

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  56395.438       0.456      89.679  291784.531   0.510429E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1357   Tt4 =   512.8986   T1  =   451.5953

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    384168.44    610.9003     79.9331      1.4807      0.8366     15.6847      1.1357     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 30029 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =14.178   EfDer =  0.965    SH =  0.102505E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     32.273    2132.713       5.592     461.406       1.000       1.000       0.980
 W Kg/sec =  14.670  Wdry =  32.240  WH2O = 0.033  lbm/sec   H2O =   0.531g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.011    2261.226       1.380       0.249      53.382      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60046.512   25312.879       3.549     831.557     234.340     619.754       2.645

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   173.30    -0.06   173.30     0.17     0.40   407.08
 MEAN    17.06     0.00    -0.02   173.30    -0.06   173.30     0.17     0.35
 HUB     12.51     0.00    -0.02   173.30    -0.06   173.30     0.17     0.28

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.71    50.47    15.24   383.95   421.31     5.49   459.00   456.30    42.49
 MEAN    61.38    47.20    14.18   317.51   361.78     5.49   459.00   456.30    42.49
 HUB     53.35    38.62    14.73   232.83   290.29     5.49   459.00   456.30    42.49

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   348.25   257.43   234.54  1052.77      0.33     7.29     6.52    16.04
 MEAN    18.04   354.59   263.87   236.86  1050.51      0.34     7.43     6.80    12.53
 HUB     15.00   386.69   303.06   240.17  1047.63      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    383.95   266.49   126.53     0.25  5311.98      0.92     0.88
 MEAN   335.68   247.51    71.81     0.24  4760.17      0.92     0.88     0.88     1.67
 HUB    279.17   241.36    23.89     0.23  4546.64      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.23     1.11     5.78   477.26     1.03   467.54   469.34    40.01
 MEAN     6.16     1.10     5.70   475.62     1.03   465.53   468.41    43.21
 HUB      6.14     1.10     5.59   474.98     1.03   462.99   468.46    47.64

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     47.66    28.35    24.20     4.15     0.93     0.54     1.80
 MEAN    48.09    16.87    12.70     4.17     0.95     0.48     2.22
 HUB     51.60    -5.68    -9.30     3.62     0.95     0.36     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.965       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   365.8943   263.3567   254.0116  1050.1049     0.3484    -0.0413     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.1736     5.6830   465.2258   468.9318    45.0018    46.0348    35.4000   -10.6348

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   254.4744    62.2522   246.7425  1056.3173     0.2409     0.4764     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.1654     5.9247   470.7630   467.9897   554.9116     0.0270     0.5656

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   253.1017     0.0000   253.1017  1056.3442     0.2396     0.4550     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9062   470.8199   468.6823     0.0000     0.0600     0.0722     0.4384
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8308     6.1435     1.0986   475.9497    14.5463   174.2580     1.3508

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  90792.297       0.616     165.585  335824.844   0.166857E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =13.157   EfDer =  0.973    SH =  0.229818E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
    32.273    2132.713       6.143     475.949       1.000       1.000       0.980
W Kg/sec =  14.670  Wdry =  32.199  WH2O = 0.074  lbm/sec   H2O =   1.253g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    73.972    2226.435       1.379       0.250      53.423      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 57000.926   25300.176       2.723     590.487     216.819     468.502       2.161

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
TIP     20.55     0.00    -0.02   231.67    -0.08   231.67     0.22     0.42   399.26
MEAN    18.08     0.00    -0.02   231.67    -0.08   231.67     0.22     0.39
HUB     15.21     0.00    -0.02   231.67    -0.08   231.67     0.22     0.35

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
TIP     58.80    46.36    12.44   382.46   447.23     5.94   471.66   470.63    57.85
MEAN    55.46    42.30    13.16   336.46   408.57     5.94   471.66   470.63    57.85
HUB     50.71    37.84    12.87   283.08   365.85     5.94   471.66   470.63    57.85

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
TIP     20.42   322.18   207.17   246.73  1066.74     0.30     2.33     2.04     9.02
MEAN    18.01   324.14   208.06   248.54  1065.03     0.30     2.40     2.13     7.35
HUB     15.22   345.97   238.57   250.56  1063.34     0.33     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
TIP    380.05   301.26   172.87     0.28  4232.14     0.92     0.89
MEAN   335.19   279.17   127.13     0.26  3748.66     0.92     0.89     0.89     1.61
HUB    283.32   254.53    44.76     0.24  3632.90     0.92     0.89

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
TIP      6.69     1.09     6.28   488.53     1.03   480.24   479.26    44.17
MEAN     6.62     1.08     6.22   487.09     1.02   478.70   478.51    46.68
HUB      6.61     1.08     6.15   486.75     1.02   477.19   478.67    49.26

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
TIP     40.02    35.02    31.50     3.52     0.93     0.49     1.40
MEAN    39.93    27.09    23.50     3.59     0.94     0.47     1.63
HUB     43.60    10.13     6.50     3.63     0.94     0.47     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.973       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   348.9034   208.6477   279.6422  1063.9092     0.3279    -0.1210     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   6.6346     6.1652   477.7390   479.1632    48.6774    36.7275    30.6000    -6.1275

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   272.5067    57.7733   266.3121  1068.1151     0.2551     0.3000     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     6.6315     6.3423   481.5292   478.1886   491.5697     0.0173     0.4060

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   282.0991     0.0000   282.0991  1067.6243     0.2642     0.3066     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.3091	481.1052	478.6047	0.0000	0.0600	0.0492	0.2216

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8529	6.6180	1.0772	487.4575	11.5100	201.8451	1.5647

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
72088.484	0.499	131.474	307097.844	0.256802E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =10.734 EfDer = 0.988 SH = 0.293266E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
32.273	2132.713	6.618	487.457	1.000	1.000	0.980

W Kg/sec = 14.670 Wdry = 32.178 WH2O = 0.095 lbm/sec H2O = 1.680g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.493	2199.998	1.378	0.251	53.443	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54262.543	25293.826	2.677	545.479	203.781	424.468	2.083

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	238.74	-0.08	238.74	0.22	0.41	385.30
MEAN	17.74	0.00	-0.02	238.74	-0.08	238.74	0.22	0.38	
HUB	15.05	0.00	-0.02	238.74	-0.08	238.74	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.42	46.36	11.06	373.53	443.38	6.40	482.91	479.18	48.87
MEAN	54.13	43.40	10.73	330.14	407.48	6.40	482.91	479.18	48.87
HUB	49.57	38.84	10.73	280.10	368.10	6.40	482.91	479.18	48.87

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	317.27	190.00	254.09	1078.03	0.29	2.26	1.98	8.75
MEAN	17.51	321.18	194.42	255.65	1076.64	0.30	2.34	2.07	6.78
HUB	14.85	345.04	229.81	257.38	1075.27	0.32	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	368.69	310.63	178.69	0.29	3765.56	0.92	0.90		
MEAN	325.82	287.44	131.40	0.27	3405.05	0.92	0.90	0.90	1.55
HUB	276.38	261.56	46.57	0.24	3413.88	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.13	1.08	6.72	498.63	1.02	490.60	486.47	39.37
MEAN	7.08	1.07	6.66	497.56	1.02	489.34	486.00	41.10
HUB	7.08	1.07	6.60	497.59	1.02	488.10	486.40	42.84

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.79	35.12	31.50	3.62	0.93	0.45	1.40
MEAN	37.25	27.20	23.50	3.70	0.94	0.44	1.62
HUB	41.76	10.26	6.50	3.76	0.94	0.45	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.988	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	347.5592	195.6939	287.2304	1075.4583	0.3232	-0.1313	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.0944	6.6067	488.3008	486.6943	42.9234	34.2671	31.5000	-2.7671

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	284.5536	62.0734	277.7006	1078.9407	0.2637	0.2303	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.0929	6.7632	491.4736	485.8498	451.3937	0.0136	0.3707

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	289.1237	0.0000	289.1237	1078.6975	0.2680	0.2776	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7421	491.2656	486.2375	0.0000	0.0600	0.0392	0.1819

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8717	7.0817	1.0701	497.9233	10.4674	211.1212	1.6366

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
65704.789	0.483	119.831	307325.156	0.328582E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.709 EfDer = 0.997 SH = 0.375114E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
32.273	2132.713	7.082	497.922	1.000	1.000	0.980

W Kg/sec = 14.670 Wdry = 32.152 WH2O = 0.121 lbm/sec H2O = 2.249g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.636	2176.754	1.377	0.251	53.470	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51835.949	25285.619	2.666	513.330	192.571	395.845	2.056

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	242.34	-0.08	242.34	0.22	0.40	365.85
MEAN	16.97	0.00	-0.02	242.34	-0.08	242.34	0.22	0.37	
HUB	14.32	0.00	-0.02	242.34	-0.08	242.34	0.22	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.94	46.36	9.58	358.46	432.76	6.84	493.25	486.86	43.74
MEAN	52.51	43.80	8.71	315.85	398.18	6.84	493.25	486.86	43.74
HUB	47.73	37.84	9.89	266.52	360.28	6.84	493.25	486.86	43.74

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	308.19	170.14	256.97	1088.01	0.28	2.16	1.89	8.34
MEAN	16.57	312.21	175.32	258.34	1086.81	0.29	2.24	1.97	6.35
HUB	13.89	334.98	211.41	259.85	1085.63	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	351.38	314.46	181.24	0.29	3213.93	0.92	0.91		
MEAN	308.46	290.63	133.15	0.27	2907.09	0.92	0.91	0.91	1.49
HUB	258.51	264.08	47.11	0.24	2937.64	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.54	1.07	7.14	507.43	1.02	499.88	492.83	36.95
MEAN	7.50	1.06	7.09	506.52	1.02	498.78	492.47	38.29
HUB	7.50	1.06	7.03	506.62	1.02	497.69	492.90	39.63

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.51	35.19	31.50	3.69	0.93	0.41	1.40
MEAN	34.16	27.27	23.50	3.77	0.93	0.40	1.62
HUB	39.13	10.28	6.50	3.78	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.997	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	333.6907	176.3025	283.3141	1085.9364	0.3073	-0.1058	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.5103	7.0419	498.0107	493.0740	39.5779	31.8934	32.4000	0.5066

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	286.2094	64.1884	278.9188	1088.4767	0.2629	0.1785	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.5094	7.1627	500.3495	492.4425	432.2457	0.0121	0.3399

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	283.8207	0.0000	283.8207	1088.5833	0.2607	0.2486	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.1583	500.4585	492.7473	0.0000	0.0600	0.0367	0.1683

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8785	7.4989	1.0589	506.8568	8.9351	231.8862	1.7976

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
56237.313	0.455	102.565	316501.688	0.417924E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.860 EfDer = 1.000 SH = 0.474877E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
32.273	2132.713	7.499	506.856	1.000	1.000	0.980

W Kg/sec = 14.670 Wdry = 32.120 WH2O = 0.153 lbm/sec H2O = 2.967g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.538	2157.486	1.375	0.252	53.502	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49758.523	25275.584	2.776	509.668	183.595	384.739	2.096

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	234.30	-0.08	234.30	0.21	0.38	344.91
MEAN	15.91	0.00	-0.02	234.30	-0.08	234.30	0.21	0.35	
HUB	13.07	0.00	-0.02	234.30	-0.08	234.30	0.21	0.31	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.51	47.36	8.15	340.96	413.77	7.27	502.50	493.41	40.90
MEAN	51.66	44.80	6.86	296.16	377.70	7.27	502.50	493.41	40.90
HUB	46.08	38.84	7.24	243.25	337.80	7.27	502.50	493.41	40.90

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	294.24	156.99	248.86	1096.97	0.27	2.05	1.78	7.43
MEAN	15.50	296.24	158.60	250.21	1095.72	0.27	2.13	1.86	5.75
HUB	12.59	314.44	188.51	251.67	1094.50	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	333.89	305.32	176.89	0.28	2817.96	0.92	0.91		
MEAN	288.43	281.89	129.84	0.26	2459.14	0.92	0.91	0.91	1.47
HUB	234.32	255.80	45.81	0.23	2374.33	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.92	1.06	7.54	515.17	1.02	508.31	498.49	35.68
MEAN	7.87	1.05	7.48	514.11	1.01	507.15	498.06	36.97
HUB	7.85	1.05	7.42	513.86	1.01	506.02	498.25	38.27

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.25	35.41	31.50	3.91	0.93	0.40	1.40
MEAN	32.37	27.43	23.50	3.93	0.93	0.38	1.64
HUB	36.83	10.32	6.50	3.82	0.93	0.38	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	327.3796	161.5040	284.7699	1094.3137	0.2992	-0.1937	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8710	7.4050	505.8898	498.7950	38.7290	29.5592	33.0000	3.4408

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   292.6356    66.8236   284.9039  1096.1503     0.2670     0.0334     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.8686     7.4946   507.5953   498.3036   410.5396     0.0261     0.3089

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   284.6649     0.0000   284.6649  1096.5254     0.2596     0.2230     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.5090   507.9527   498.4632     0.0000     0.0600     0.0407     0.0695

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8769     7.8628     1.0485   514.3688     7.5236   257.8513     1.9988

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  47502.938       0.426      86.635  333811.438   0.520546E-02

Melt Ratio at Stator LE, Throat, TE
0.14900E-01 0.25139E-01 0.77776E-01
 trTOT =     1.1148   Tt4 =   514.3688   T1  =   461.4056

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    332325.81    606.0900     80.0108      1.4060      0.8519     14.1782      1.1148     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 25666 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.307   EfDer =  0.994    SH =  0.133955E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     40.803    1960.632       6.513     472.317       1.000       1.000       0.980
  W Kg/sec =  18.547  Wdry =  40.748  WH2O = 0.055  lbm/sec   H2O =   0.786g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     87.879    2054.629       1.380       0.249      53.392      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66937.508   31998.811       3.230     831.557     257.446     619.754       2.407

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
  TIP     20.63     0.00    -0.02   193.19    -0.07   193.19     0.18     0.38   369.89
  MEAN    17.06     0.00    -0.02   193.19    -0.07   193.19     0.18     0.33
  HUB     12.51     0.00    -0.02   193.19    -0.07   193.19     0.18     0.27

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
  TIP     61.31    50.47    10.84   352.97   402.44     6.36   469.33   465.58    40.06
  MEAN    56.51    47.20     9.31   291.89   350.09     6.36   469.33   465.58    40.06
  HUB     47.94    38.62     9.32   214.04   288.38     6.36   469.33   465.58    40.06

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
  TIP     20.63   338.06   210.99   264.14  1061.14      0.32     7.29     6.52    16.04
  MEAN    18.04   350.58   228.37   265.99  1059.65      0.33     7.43     6.80    12.53
  HUB     15.00   391.01   283.70   269.08  1057.38      0.37     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
  TIP    352.97   299.89   141.99     0.28  4354.02      0.92     0.91
  MEAN   308.59   277.82    80.22     0.26  4120.05      0.92     0.91     0.91     1.42
  HUB    256.65   270.44    27.05     0.26  4256.29      0.92     0.91

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
  TIP       7.07     1.09     6.60   484.25     1.03   475.10   475.59    40.97
  MEAN      7.04     1.08     6.54   483.61     1.02   473.76   475.37    43.00
  HUB       7.06     1.08     6.43   483.98     1.02   471.74   476.20    46.29

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
  TIP     38.62    28.26    24.20     4.06     0.93     0.40     1.80
  MEAN    40.65    16.78    12.70     4.08     0.93     0.36     2.22
  HUB     46.51    -5.74    -9.30     3.56     0.93     0.24     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.994       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   365.3434   227.9281   285.5251  1059.0339     0.3450    -0.0592     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     7.0537     6.5038   473.2683   475.9644    45.0072    38.5996    35.4000    -3.1996

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   288.2955    70.5259   279.5360  1063.5182     0.2711     0.3398     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     7.0511     6.7050   477.2980   475.2170   554.9116     0.0148     0.4397

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   286.2093     0.0000   286.2093  1063.6001     0.2691     0.3514     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     6.6971   477.3951   475.8236     0.0000     0.0600     0.0401     0.3251
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8736     7.0375     1.0805   483.9465    11.6310   199.8359     1.5491

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  72690.945       0.583     167.610  418423.125   0.200155E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.483   EfDer =  0.999    SH =  0.260535E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     40.803    1960.632       7.038     483.945       1.000       1.000       0.980
 W Kg/sec =  18.547  Wdry =  40.696  WH2O = 0.106  lbm/sec   H2O =   1.591g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.324    2029.810       1.378       0.250      53.433      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64372.004   31982.828       2.447     590.487     241.353     468.502       1.941

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   261.63    -0.09   261.63     0.25     0.41   364.00
 MEAN    18.08     0.00    -0.02   261.63    -0.09   261.63     0.25     0.38
 HUB     15.21     0.00    -0.02   261.63    -0.09   261.63     0.25     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.35    46.36     6.99   351.61   438.33     6.75   478.48   477.54    55.32
 MEAN    49.78    42.30     7.48   309.31   405.19     6.75   478.48   477.54    55.32
 HUB     44.86    37.84     7.02   260.24   369.08     6.75   478.48   477.54    55.32

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   320.03   151.84   281.72  1071.08     0.30     2.33     2.04     9.02
 MEAN    18.01   326.58   163.28   282.84  1070.22     0.31     2.40     2.13     7.35
 HUB     15.22   353.03   209.52   284.13  1069.38     0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    349.38   344.07   197.54     0.32  3102.42     0.92     0.91
 MEAN   308.15   317.78   144.86     0.30  2942.34     0.92     0.91     0.91     1.38
 HUB    260.46   288.66    50.94     0.27  3190.90     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.46     1.06     7.02   492.42     1.02   484.24   483.35    46.89
 MEAN     7.43     1.06     6.98   491.98     1.02   483.47   483.22    48.17
 HUB      7.47     1.06     6.93   492.66     1.02   482.71   484.02    49.42

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.32    35.04    31.50     3.54     0.93     0.34     1.40
 MEAN    30.00    27.12    23.50     3.62     0.93     0.34     1.63
 HUB     36.41    10.16     6.50     3.66     0.93     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   358.4814   163.7406   318.9011  1068.6694     0.3354    -0.1628     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.4488     6.8987   482.1011   484.0263    50.8663    27.1784    30.6000     3.4216

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   313.0713    66.3733   305.9546  1071.3605     0.2922     0.1025     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4466     7.0244   484.5334   483.3547   491.5697     0.0146     0.2594

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   324.2202     0.0000   324.2202  1070.7222     0.3028     0.1529     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9828	483.9676	483.7681	0.0000	0.0600	0.0406	0.0156

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8720	7.4341	1.0564	492.3499	8.4049	249.4256	1.9335

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
52698.277	0.432	121.511	385825.906	0.284415E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.589 EfDer = 0.995 SH = 0.313946E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
40.803	1960.632	7.434	492.349	1.000	1.000	0.980

W Kg/sec = 18.547 Wdry = 40.674 WH2O = 0.128 lbm/sec H2O = 1.985g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.605	2012.414	1.377	0.251	53.450	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62155.180	31976.066	2.366	545.479	230.537	424.468	1.841

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	273.46	-0.09	273.46	0.25	0.41	352.45
MEAN	17.74	0.00	-0.02	273.46	-0.09	273.46	0.25	0.38	
HUB	15.05	0.00	-0.02	273.46	-0.09	273.46	0.25	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.48	46.36	5.12	343.39	439.05	7.11	486.39	483.92	50.31
MEAN	47.99	43.40	4.59	303.50	408.60	7.11	486.39	483.92	50.31
HUB	43.29	38.84	4.45	257.50	375.68	7.11	486.39	483.92	50.31

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	322.56	130.87	294.82	1078.55	0.30	2.26	1.98	8.75
MEAN	17.51	330.02	146.91	295.52	1078.06	0.31	2.34	2.07	6.78
HUB	14.85	357.42	199.73	296.40	1077.60	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	338.94	360.85	208.07	0.33	2594.50	0.92	0.91		
MEAN	299.53	332.60	152.62	0.31	2573.60	0.92	0.91	0.91	1.32
HUB	254.08	301.35	54.35	0.28	2967.41	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.80	1.05	7.33	499.42	1.01	491.13	488.66	44.47
MEAN	7.79	1.05	7.31	499.36	1.01	490.69	488.76	45.13
HUB	7.85	1.06	7.28	500.44	1.02	490.26	489.77	45.75

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	23.94	35.21	31.50	3.71	0.93	0.28	1.40
MEAN	26.43	27.31	23.50	3.81	0.92	0.30	1.62
HUB	33.97	10.39	6.50	3.89	0.92	0.33	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	364.2469	147.8764	332.8790	1076.3717	0.3384	-0.1755	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8069	7.2210	489.1771	489.6396	47.8174	23.9524	31.5000	7.5476

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	332.4394	72.5194	324.4331	1078.3101	0.3083	0.0075	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.8018	7.3118	490.9417	489.1336	451.3937	0.0201	0.2175

```
    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   338.1968     0.0000   338.1968  1077.9635     0.3137     0.0981     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.2785   490.6353   489.4637     0.0000     0.0600     0.0554    -0.0586

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8441     7.7840     1.0471   499.7396     7.3907   269.5492     2.0895

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  46422.258       0.404     107.040  388576.219   0.341364E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 2.021   EfDer =  0.976    SH =  0.375041E-02

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     40.803    1960.632       7.784     499.739       1.000       1.000       0.980
 W Kg/sec =  18.547  Wdry =  40.649  WH2O = 0.153  lbm/sec   H2O =   2.441g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.633    1997.479       1.376       0.251      53.470      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60371.988   31968.314       2.313     513.330     221.906     395.845       1.784

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   282.25    -0.10   282.25     0.26     0.40   335.72
 MEAN    16.97     0.00    -0.02   282.25    -0.10   282.25     0.26     0.37
 HUB     14.32     0.00    -0.02   282.25    -0.10   282.25     0.26     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.43    46.36     3.07   329.53   433.96     7.43   493.41   489.49    47.20
 MEAN    45.82    43.80     2.02   290.36   405.01     7.43   493.41   489.49    47.20
 HUB     40.97    37.84     3.13   245.01   373.82     7.43   493.41   489.49    47.20

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     18.88   322.13   107.73   303.58  1084.89      0.30     2.16     1.89     8.34
 MEAN    16.57   328.96   125.77   303.97  1084.65      0.30     2.24     1.97     6.35
 HUB     13.89   354.50   181.39   304.57  1084.43      0.33     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    323.03   372.18   215.30     0.34  2035.77      0.92     0.89
 MEAN   283.57   342.49   157.81     0.32  2086.13      0.92     0.89     0.89     1.27
 HUB    237.65   309.73    56.26     0.29  2520.91      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.07     1.04     7.60   505.28     1.01   497.03   493.19    43.39
 MEAN     8.08     1.04     7.59   505.41     1.01   496.81   493.37    43.69
 HUB      8.14     1.05     7.57   506.60     1.01   496.61   494.40    43.94

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     19.54    35.34    31.50     3.84     0.93     0.23     1.40
 MEAN    22.48    27.44    23.50     3.94     0.91     0.25     1.62
 HUB     30.78    10.47     6.50     3.97     0.91     0.29     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.976       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   357.2826   126.4764   334.1475  1083.3203     0.3298    -0.1432     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.0898     7.5121   495.6189   494.1432    45.7228    20.7319    32.4000    11.6681

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   340.4245    76.3473   331.7528  1084.3392     0.3139    -0.0547     2.2705
```

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.0807	7.5555	496.5542	493.8870	432.2457	0.0278	0.1811

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	338.1694	0.0000	338.1694	1084.4659	0.3118	0.0448	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.5380	496.6766	494.0530	0.0000	0.0600	0.0786	-0.0891

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7788	8.0547	1.0348	505.7616	6.0231	309.2666	2.3974

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
37905.641	0.363	87.402	402608.031	0.405254E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-0.361 EfDer = 0.944 SH = 0.443486E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
40.803	1960.632	8.055	505.761	1.000	1.000	0.980

W Kg/sec = 18.547 Wdry = 40.622 WH2O = 0.181 lbm/sec H2O = 2.955g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
73.531	1985.552	1.376	0.252	53.492	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
58984.168	31959.619	2.361	509.668	215.829	384.739	1.783

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	277.74	-0.10	277.74	0.26	0.39	317.43
MEAN	15.91	0.00	-0.02	277.74	-0.10	277.74	0.26	0.36	
HUB	13.07	0.00	-0.02	277.74	-0.10	277.74	0.26	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	48.46	47.36	1.10	313.45	418.87	7.70	499.64	494.00	45.24
MEAN	44.44	44.80	-0.36	272.27	389.00	7.70	499.64	494.00	45.24
HUB	38.85	38.84	0.01	223.62	356.64	7.70	499.64	494.00	45.24

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	313.39	92.51	299.42	1090.70	0.29	2.05	1.78	7.43
MEAN	15.50	318.70	108.17	299.79	1090.46	0.29	2.13	1.86	5.75
HUB	12.59	340.08	159.43	300.40	1090.22	0.31	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	306.95	368.29	214.44	0.34	1661.37	0.92	0.86		
MEAN	265.16	338.41	156.99	0.31	1677.85	0.92	0.86	0.86	1.24
HUB	215.41	305.57	55.98	0.28	2008.46	0.92	0.86		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.28	1.03	7.83	510.27	1.01	502.48	497.04	42.69
MEAN	8.29	1.03	7.82	510.31	1.01	502.26	497.15	42.98
HUB	8.33	1.03	7.80	511.21	1.01	502.04	497.95	43.24

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	17.17	35.61	31.50	4.11	0.93	0.20	1.40
MEAN	19.84	27.64	23.50	4.14	0.90	0.21	1.64
HUB	27.96	10.56	6.50	4.06	0.90	0.25	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.944	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	359.7658	110.1503	342.4885	1088.3433	0.3306	-0.2475	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2915	7.6971	500.3371	498.1535	45.9343	17.8287	33.0000	15.1713

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   355.6500    81.2130   346.2533  1088.5957     0.3267    -0.2644     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.2662     7.6868   500.5716   498.0955   410.5396     0.0721     0.1490

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   345.9942     0.0000   345.9942  1089.1759     0.3177     0.0109     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.7036   501.1093   498.1128     0.0000     0.0600     0.1017    -0.2299

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6917     8.2518     1.0245   510.5993     4.8385   359.6746     2.7882

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  30516.439       0.324      70.364  426646.594   0.475987E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0811   Tt4 =   510.5993   T1  =   472.3171

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    240233.55    553.9273     87.8791      1.2670      0.8257      9.3073     1.0811     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 20047 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.688   EfDer =  0.999    SH =  0.193758E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     50.585    1802.880       7.939     487.551       1.000       1.000       0.980
  W Kg/sec =  22.993  Wdry =  50.487  WH2O = 0.098  lbm/sec   H2O =   1.341g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     90.806    1859.571       1.379       0.250      53.411      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  70383.422   39661.488       3.125     831.557     266.132     619.754       2.329

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   203.14    -0.07   203.14     0.19     0.36   334.77
 MEAN    17.06     0.00    -0.02   203.14    -0.07   203.14     0.19     0.31
 HUB     12.51     0.00    -0.02   203.14    -0.07   203.14     0.19     0.26

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.96    50.47     7.49   324.57   382.96     7.75   484.25   478.08    36.96
 MEAN    52.89    47.20     5.69   268.41   336.67     7.75   484.25   478.08    36.96
 HUB     44.11    38.62     5.49   196.82   282.90     7.75   484.25   478.08    36.96

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.90   173.50   280.59  1075.13      0.31     7.29     6.52    16.04
 MEAN    18.04   344.71   198.52   281.80  1074.25      0.32     7.43     6.80    12.53
 HUB     15.00   388.30   264.36   284.41  1072.50      0.36     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    324.57   318.67   151.07     0.30  3580.85      0.92     0.91
 MEAN   283.76   294.41    85.24     0.27  3581.72      0.92     0.91     0.91     1.28
 HUB    236.00   285.82    28.36     0.27  3966.25      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.44     1.06     7.91   496.56     1.02   487.86   485.92    40.12
 MEAN     8.44     1.06     7.87   496.56     1.02   487.06   486.13    41.21
 HUB      8.49     1.07     7.77   497.53     1.02   485.47   487.37    43.46

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.73    28.30    24.20     4.10     0.93     0.29     1.80
 MEAN    35.16    16.83    12.70     4.13     0.92     0.26     2.22
 HUB     42.91    -5.69    -9.30     3.61     0.92     0.16     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   361.7742   198.1355   302.6928  1073.4830     0.3370    -0.0735     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     8.4504     7.8207   486.4337   486.7867    43.2274    33.2078    35.4000     2.1922

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   307.6534    75.2614   298.3058  1076.6567     0.2857     0.2315     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     8.4481     7.9893   489.3265   486.2127   554.9116     0.0138     0.3518

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   305.3557     0.0000   305.3557  1076.7620     0.2836     0.2561     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     7.9819   489.4404   486.8054     0.0000     0.0600     0.0383     0.2195
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8721     8.4332     1.0622   496.8796     9.3297   221.9092     1.7202

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  58448.453       0.555     167.082  507242.969   0.273325E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.267   EfDer =  0.988    SH =  0.343295E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
    50.585    1802.880       8.433     496.878       1.000       1.000       0.980
W Kg/sec =  22.993  Wdry =  50.412  WH2O = 0.174  lbm/sec   H2O =   2.437g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    86.301    1842.041       1.377       0.251      53.460      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68635.156   39638.027       2.333     590.487     253.152     468.502       1.851

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   278.95    -0.10   278.95     0.26     0.40   330.33
 MEAN   18.08     0.00    -0.02   278.95    -0.10   278.95     0.26     0.37
 HUB    15.21     0.00    -0.02   278.95    -0.10   278.95     0.26     0.34

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    49.22    46.36     2.86   323.32   427.09     8.06   490.69   488.51    52.27
 MEAN   45.57    42.30     3.27   284.43   398.45     8.06   490.69   488.51    52.27
 HUB    40.64    37.84     2.80   239.30   367.59     8.06   490.69   488.51    52.27

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   322.35   107.50   303.90  1081.74     0.30     2.33     2.04     9.02
 MEAN   18.01   329.59   126.85   304.20  1081.57     0.30     2.40     2.13     7.35
 HUB    15.22   356.08   184.25   304.71  1081.41     0.33     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   321.27   371.56   213.77     0.34  2197.06     0.92     0.90
 MEAN  283.35   342.09   156.50     0.32  2286.31     0.92     0.90     0.90     1.25
 HUB   239.50   309.68    55.25     0.29  2806.32     0.92     0.90

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     8.75     1.04     8.23   502.38     1.01   494.11   492.34    48.17
 MEAN    8.76     1.04     8.22   502.60     1.01   493.96   492.58    48.41
 HUB     8.83     1.05     8.20   503.90     1.01   493.82   493.71    48.59

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    19.48    35.12    31.50     3.62     0.93     0.22     1.40
 MEAN   22.64    27.22    23.50     3.72     0.92     0.24     1.63
 HUB    31.16    10.28     6.50     3.78     0.92     0.28     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.988       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   366.3010   127.2067   343.5038  1079.7161     0.3393    -0.1934     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.7736     8.1122   492.2903   493.5315    51.4627    20.3206    30.6000    10.2794

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   339.1938    71.9115   331.4832  1081.3824     0.3137    -0.0404     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     8.7649     8.1960   493.8117   493.0635   491.5697     0.0255     0.1638

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   351.9251     0.0000   351.9251  1080.6091     0.3257     0.0276     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1304	493.1129	493.5090	0.0000	0.0600	0.0701	-0.1575

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8020	8.7399	1.0364	502.9617	6.0832	301.1798	2.3347

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
38247.953	0.371	109.336	470686.906	0.369099E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =-0.091 EfDer = 0.949 SH = 0.399296E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
50.585	1802.880	8.740	502.961	1.000	1.000	0.980

W Kg/sec = 22.993 Wdry = 50.383 WH2O = 0.202 lbm/sec H2O = 2.890g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
83.781	1830.870	1.376	0.251	53.478	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
67316.453	39629.215	2.219	545.479	245.852	424.468	1.727

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	296.17	-0.10	296.17	0.27	0.40	320.66
MEAN	17.74	0.00	-0.02	296.17	-0.10	296.17	0.27	0.38	
HUB	15.05	0.00	-0.02	296.17	-0.10	296.17	0.27	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	46.84	46.36	0.48	315.76	433.00	8.31	495.99	493.35	50.67
MEAN	43.31	43.40	-0.09	279.08	407.01	8.31	495.99	493.35	50.67
HUB	38.65	38.84	-0.19	236.78	379.25	8.31	495.99	493.35	50.67

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	333.87	82.33	323.56	1086.09	0.31	2.26	1.98	8.75
MEAN	17.51	340.70	107.49	323.30	1086.37	0.31	2.34	2.07	6.78
HUB	14.85	366.96	173.45	323.38	1086.65	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	311.67	396.60	229.34	0.37	1632.96	0.92	0.87		
MEAN	275.43	364.32	167.95	0.34	1883.50	0.92	0.87	0.87	1.19
HUB	233.64	328.94	60.18	0.30	2577.29	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.97	1.03	8.41	507.04	1.01	498.19	496.30	48.55
MEAN	9.00	1.03	8.42	507.67	1.01	498.45	496.73	48.12
HUB	9.10	1.04	8.42	509.40	1.01	498.71	498.06	47.65

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	14.28	35.33	31.50	3.83	0.93	0.15	1.40
MEAN	18.39	27.45	23.50	3.95	0.90	0.19	1.62
HUB	28.21	10.54	6.50	4.04	0.90	0.25	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.949	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	380.6712	108.1903	364.9731	1084.2577	0.3511	-0.2080	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.0173	8.2922	496.5322	497.8180	51.4721	16.5116	31.5000	14.9884

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	366.8205	80.0194	357.9863	1085.1552	0.3380	-0.1459	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.0004	8.3269	497.3549	497.5509	451.3937	0.0378	0.1194

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   374.1470     0.0000   374.1470  1084.6801     0.3449    -0.0369     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2654   496.9249   497.8715     0.0000     0.0600     0.1005    -0.2472

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6824     8.9623     1.0254   508.0374     5.0764   341.1821     2.6448

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  31973.135       0.329      91.399  476627.844   0.425585E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =-3.160   EfDer =  0.891    SH =  0.456299E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     50.585    1802.880       8.962     508.036       1.000       1.000       0.980
 W Kg/sec =  22.993  Wdry =  50.354  WH2O = 0.231  lbm/sec   H2O =   3.340g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.113    1821.701       1.375       0.252      53.496      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66562.656   39620.227       2.130     513.330     241.043     395.845       1.642

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   311.20    -0.11   311.20     0.29     0.40   306.17
 MEAN    16.97     0.00    -0.02   311.20    -0.11   311.20     0.29     0.38
 HUB     14.32     0.00    -0.02   311.20    -0.11   311.20     0.29     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     44.25    46.36    -2.11   303.02   434.43     8.48   500.36   497.40    49.80
 MEAN    40.64    43.80    -3.16   267.00   410.11     8.48   500.36   497.40    49.80
 HUB     35.92    37.84    -1.92   225.30   384.25     8.48   500.36   497.40    49.80

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   343.81    55.13   339.36  1089.34     0.32     2.16     1.89     8.34
 MEAN    16.57   348.89    83.77   338.69  1089.98     0.32     2.24     1.97     6.35
 HUB     13.89   372.28   154.92   338.52  1090.59     0.34     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    297.04   416.75   241.91     0.38  1042.95     0.92     0.81
 MEAN   260.76   382.15   176.99     0.35  1390.19     0.92     0.81     0.81     1.14
 HUB    218.53   344.44    63.61     0.32  2153.41     0.92     0.81

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.10     1.02     8.50   510.64     1.01   501.27   499.53    49.59
 MEAN     9.15     1.02     8.53   511.50     1.01   501.85   500.02    48.64
 HUB      9.25     1.03     8.54   513.41     1.01   502.42   501.35    47.66

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      9.23    35.48    31.50     3.98     0.93     0.09     1.40
 MEAN    13.89    27.59    23.50     4.09     0.89     0.13     1.62
 HUB     24.59    10.64     6.50     4.14     0.89     0.21     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.891       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   382.5934    84.2397   373.2042  1088.2128     0.3516    -0.1709     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.1586     8.4205   500.2491   501.0012    51.4197    12.7196    32.4000    19.6804

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   382.7505    85.8398   373.0007  1088.2025     0.3517    -0.2008     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1337     8.3971   500.2406   501.0273   432.2457     0.0488     0.0830

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   381.2060     0.0000   381.2060  1088.3018     0.3503    -0.0883     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.3553   500.3349   501.0995     0.0000     0.0600     0.1297    -0.2661

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.4831     9.0821     1.0134   511.8507     3.8141   419.8521     3.2547

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  24064.551       0.273      68.791  496569.906   0.482393E-02

Melt Ratio at Stator LE, Throat, TE
0.85372E-03 0.85372E-03 0.85372E-03

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-6.014   EfDer =  0.828    SH =  0.511517E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     50.585    1802.880       9.082     511.848       1.000       1.000       0.980
 W Kg/sec =  22.993  Wdry =  50.327  WH2O = 0.259  lbm/sec   H2O =   3.765g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     81.334    1814.902       1.375       0.252      53.514      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66188.477   39611.508       2.134     509.668     238.837     384.739       1.611

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   311.67    -0.11   311.67     0.29     0.39   290.14
 MEAN    15.91     0.00    -0.02   311.67    -0.11   311.67     0.29     0.37
 HUB     13.07     0.00    -0.02   311.67    -0.11   311.67     0.29     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     42.77    47.36    -4.59   288.23   424.59     8.59   504.16   500.33    48.89
 MEAN    38.79    44.80    -6.01   250.36   399.84     8.59   504.16   500.33    48.89
 HUB     33.43    38.84    -5.41   205.63   373.45     8.59   504.16   500.33    48.89

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   342.48    37.09   340.46  1092.46      0.31     2.05     1.78     7.43
 MEAN    15.50   345.87    64.61   339.78  1093.16      0.32     2.13     1.86     5.75
 HUB     12.59   365.04   133.74   339.66  1093.83      0.33     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    282.25   419.55   245.16     0.38   667.35      0.92     0.76
 MEAN   243.83   384.15   179.21     0.35  1003.09      0.92     0.76     0.76     1.11
 HUB    198.08   345.70    64.34     0.32  1685.13      0.92     0.76

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.16     1.01     8.57   513.51     1.00   504.22   501.88    49.54
 MEAN     9.21     1.01     8.60   514.34     1.00   504.87   502.30    48.48
 HUB      9.29     1.02     8.61   516.04     1.01   505.49   503.42    47.43

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      6.22    35.76    31.50     4.26     0.93     0.04     1.40
 MEAN    10.77    27.81    23.50     4.31     0.87     0.09     1.64
 HUB     21.49    10.73     6.50     4.23     0.87     0.16     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.828       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   395.2317    65.7998   389.7159  1090.3190     0.3625    -0.2833     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.2075     8.4216   502.2646   503.6270    52.6636     9.5835    33.0000    23.4165
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   408.3179    93.2397   397.5297  1089.4160     0.3748    -0.4413     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1498     8.3178   501.4315   503.9286   410.5396     0.1121     0.0557

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   397.0071     0.0000   397.0071  1090.1945     0.3642    -0.0992     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.3436   502.1483   503.7329     0.0000     0.0600     0.1444    -0.4001

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.2632     9.1297     1.0052   514.6199     2.7806   530.0331     4.1088

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  17571.299       0.221      50.230  528644.188   0.530777E-02

Melt Ratio at Stator LE, Throat, TE
0.13813E+00 0.14733E+00 0.17387E+00
 trTOT =     1.0555   Tt4 =   514.6199   T1  =   487.5511

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    170305.39    486.8386     90.8058      1.1499      0.7008      5.6880      1.0555     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 15435 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 6.821   EfDer =  1.000    SH =  0.280907E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     49.379    1594.205       9.337     500.810       1.000       1.000       0.980
  W Kg/sec =  22.445  Wdry =  49.240  WH2O = 0.139  lbm/sec   H2O =   2.237g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.386    1622.427       1.378       0.251      53.439      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59717.055   38702.273       3.712     831.557     224.000     619.754       2.767

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   172.35    -0.06   172.35     0.16     0.31   292.08
 MEAN    17.06     0.00    -0.02   172.35    -0.06   172.35     0.16     0.27
 HUB     12.51     0.00    -0.02   172.35    -0.06   172.35     0.16     0.23

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     59.02    50.47     8.55   287.01   334.83     9.18   498.44   488.84    35.77
 MEAN    54.02    47.20     6.82   237.34   293.37     9.18   498.44   488.84    35.77
 HUB     45.29    38.62     6.67   174.04   244.98     9.18   498.44   488.84    35.77

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   286.57   158.81   238.54  1089.90      0.26     7.29     6.52    16.04
 MEAN    18.04   298.72   178.68   239.39  1089.15      0.27     7.43     6.80    12.53
 HUB     15.00   335.13   232.82   241.05  1087.80      0.31     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    287.01   270.80   128.20     0.25  3277.48      0.92     0.91
 MEAN   250.92   250.05    72.24     0.23  3223.66      0.92     0.91     0.91     1.32
 HUB    208.68   242.26    24.14     0.22  3493.04      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.80     1.05     9.34   508.08     1.01   501.53   495.54    39.92
 MEAN     9.79     1.05     9.30   507.96     1.01   500.85   495.65    40.79
 HUB      9.83     1.05     9.21   508.56     1.02   499.60   496.51    42.41

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.65    28.25    24.20     4.05     0.93     0.32     1.80
 MEAN    36.74    16.79    12.70     4.09     0.93     0.29     2.22
 HUB     44.00    -5.72    -9.30     3.58     0.93     0.18     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       1.000       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   312.6525   178.3314   256.8064  1088.5790     0.2872    -0.0688     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     9.8000     9.2631   500.4215   496.2357    42.4927    34.7769    35.4000     0.6231

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   261.8520    64.0570   253.8960  1091.0848     0.2400     0.2601     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     9.7994     9.4204   502.7439   495.8019   554.9116     0.0113     0.3728

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   259.8379     0.0000   259.8379  1091.1547     0.2381     0.2801     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.4135   502.8279   496.5464     0.0000     0.0600     0.0367     0.2468
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8759     9.7861     1.0481   508.1947     7.3873   214.7624     1.6648

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  46442.723       0.564     129.596  482916.750   0.398062E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.79073E-02

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 4.304   EfDer =  0.994    SH =  0.479743E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.379    1594.205       9.786     508.181       1.000       1.000       0.980
 W Kg/sec =  22.445  Wdry =  49.142  WH2O = 0.237  lbm/sec   H2O =   3.898g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.418    1610.599       1.375       0.252      53.504      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58530.781   38671.719       2.739     590.487     215.547     468.502       2.174

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   237.88    -0.08   237.88     0.22     0.34   288.82
 MEAN    18.08     0.00    -0.02   237.88    -0.08   237.88     0.22     0.32
 HUB     15.21     0.00    -0.02   237.88    -0.08   237.88     0.22     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     50.25    46.36     3.89   285.89   371.98     9.47   503.70   498.27    51.46
 MEAN    46.60    42.30     4.30   251.51   346.24     9.47   503.70   498.27    51.46
 HUB     41.66    37.84     3.82   211.60   318.43     9.47   503.70   498.27    51.46

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   278.94   101.63   259.76  1095.04      0.25     2.33     2.04     9.02
 MEAN    18.01   285.18   117.02   260.06  1094.82      0.26     2.40     2.13     7.35
 HUB     15.22   308.21   164.74   260.48  1094.60      0.28     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    284.08   317.44   182.46     0.29  2076.95      0.92     0.91
 MEAN   250.56   292.34   133.54     0.27  2108.99      0.92     0.91     0.91     1.28
 HUB    211.78   264.69    47.04     0.24  2509.15      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.08     1.03     9.65   512.75     1.01   506.58   501.27    47.87
 MEAN    10.09     1.03     9.63   512.82     1.01   506.38   501.40    48.17
 HUB     10.15     1.04     9.61   513.70     1.01   506.18   502.20    48.44

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     21.37    35.08    31.50     3.58     0.93     0.24     1.40
 MEAN    24.23    27.18    23.50     3.68     0.92     0.26     1.63
 HUB     32.31    10.24     6.50     3.74     0.92     0.30     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   315.3905   117.3477   292.7469  1093.5277     0.2884    -0.1832     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.1003     9.5431   505.2029   502.0889    50.0895    21.8434    30.6000     8.7566

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   289.4114    61.3573   282.8325  1094.8628     0.2643    -0.0096     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.0960     9.6243   506.4384   501.6612   491.5697     0.0190     0.1836

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   299.5848     0.0000   299.5848  1094.3157     0.2738     0.0540     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.5732	505.9365	501.9206	0.0000	0.0600	0.0615	-0.1168

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8343	10.0758	1.0296	513.0439	4.9079	287.9884	2.2325

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
30988.785	0.384	86.473	447791.406	0.497943E-02

Melt Ratio at Stator LE, Throat, TE
0.33557E+00 0.38047E+00 0.50814E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 0.863 EfDer = 0.962 SH = 0.513942E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.379	1594.205	10.076	513.031	1.000	1.000	0.980

W Kg/sec = 22.445 Wdry = 49.125 WH2O = 0.254 lbm/sec H2O = 4.246g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
71.647	1602.969	1.375	0.252	53.515	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
57570.910	38666.441	2.593	545.479	210.400	424.468	2.017

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	253.30	-0.09	253.30	0.23	0.34	280.74
MEAN	17.74	0.00	-0.02	253.30	-0.09	253.30	0.23	0.32	
HUB	15.05	0.00	-0.02	253.30	-0.09	253.30	0.23	0.30	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	47.80	46.36	1.44	279.22	377.05	9.71	507.95	501.55	48.12
MEAN	44.26	43.40	0.86	246.78	353.70	9.71	507.95	501.55	48.12
HUB	39.59	38.84	0.75	209.38	328.69	9.71	507.95	501.55	48.12

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	288.07	79.63	276.84	1098.58	0.26	2.26	1.98	8.75
MEAN	17.51	294.32	100.03	276.79	1098.68	0.27	2.34	2.07	6.78
HUB	14.85	317.52	155.32	276.93	1098.79	0.29	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	275.60	339.18	195.96	0.31	1579.32	0.92	0.88		
MEAN	243.55	311.79	143.52	0.28	1752.81	0.92	0.88	0.88	1.21
HUB	206.59	281.64	51.27	0.26	2307.85	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.30	1.02	9.82	516.49	1.01	509.92	503.77	45.61
MEAN	10.32	1.02	9.83	516.87	1.01	510.02	504.05	45.47
HUB	10.40	1.03	9.83	518.09	1.01	510.12	505.01	45.29

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	16.05	35.29	31.50	3.79	0.93	0.18	1.40
MEAN	19.87	27.41	23.50	3.91	0.91	0.21	1.62
HUB	29.29	10.49	6.50	3.99	0.91	0.26	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.962	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	327.2227	100.6913	311.3454	1097.2194	0.2982	-0.1973	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3347	9.7268	508.6671	504.7848	47.4026	17.9216	31.5000	13.5784

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	312.8594	68.2482	305.3247	1097.9915	0.2849	-0.1149	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.3249	9.7669	509.3824	504.5102	451.3937	0.0291	0.1377

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	318.3843	0.0000	318.3843	1097.6531	0.2901	-0.0126	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.7191	509.0706	504.6125	0.0000	0.0600	0.0911	-0.2079

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7367	10.2930	1.0216	517.0913	4.1210	325.4004	2.5225

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
26043.799	0.343	72.674	453904.594	0.522861E-02

Melt Ratio at Stator LE, Throat, TE
0.83019E+00 0.87322E+00 0.99345E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =-2.229 EfDer = 0.910 SH = 0.548320E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.379	1594.205	10.293	517.082	1.000	1.000	0.980

W Kg/sec = 22.445 Wdry = 49.108 WH2O = 0.271 lbm/sec H2O = 4.578g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.411	1596.683	1.374	0.253	53.526	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56959.262	38661.133	2.482	513.330	206.813	395.845	1.914

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	266.30	-0.09	266.30	0.24	0.34	268.35
MEAN	16.97	0.00	-0.02	266.30	-0.09	266.30	0.24	0.32	
HUB	14.32	0.00	-0.02	266.30	-0.09	266.30	0.24	0.30	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	45.19	46.36	-1.17	267.95	377.84	9.89	511.48	504.30	45.84
MEAN	41.57	43.80	-2.23	236.10	355.95	9.89	511.48	504.30	45.84
HUB	36.81	37.84	-1.03	199.22	332.63	9.89	511.48	504.30	45.84

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	295.40	56.13	290.02	1101.32	0.27	2.16	1.89	8.34
MEAN	16.57	300.40	79.41	289.72	1101.67	0.27	2.24	1.97	6.35
HUB	13.89	321.35	139.09	289.69	1102.02	0.29	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	262.66	356.04	206.53	0.32	1061.55	0.92	0.83		
MEAN	230.58	326.78	151.16	0.30	1317.76	0.92	0.83	0.83	1.16
HUB	193.24	294.70	54.15	0.27	1933.25	0.92	0.83		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.44	1.01	9.94	519.42	1.00	512.52	506.22	45.83
MEAN	10.47	1.02	9.95	519.98	1.01	512.85	506.55	45.35
HUB	10.55	1.03	9.96	521.33	1.01	513.17	507.51	44.85

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	10.95	35.46	31.50	3.96	0.93	0.11	1.40
MEAN	15.33	27.55	23.50	4.05	0.89	0.15	1.62
HUB	25.65	10.59	6.50	4.09	0.89	0.22	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.910	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	328.1433	79.8611	318.2769	1100.4451	0.2982	-0.1622	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.4815	9.8653	511.7358	507.2787	47.1926	14.0857	32.4000	18.3143

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	325.7966	73.0667	317.4975	1100.5717	0.2960	-0.1676	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4659     9.8593   511.8582   507.2966   432.2457     0.0390     0.1003

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   324.0378     0.0000   324.0378  1100.6637     0.2944    -0.0677     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.8237   511.9493   507.4561     0.0000     0.0600     0.1219    -0.2339

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.5520    10.4213     1.0125   520.2436     3.1613   394.4397     3.0577

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  20007.506       0.290      55.830  473185.938   0.587221E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-5.086   EfDer =  0.848    SH =  0.633826E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.379    1594.205      10.421     520.242       1.000       1.000       0.980
 W Kg/sec =  22.445  Wdry =  49.066  WH2O = 0.313  lbm/sec   H2O =   5.323g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     69.756    1591.839       1.373       0.253      53.554      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  56625.770   38647.910       2.486     509.668     204.994     384.739       1.877

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   266.64    -0.09   266.64     0.24     0.33   254.48
 MEAN   15.91     0.00    -0.02   266.64    -0.09   266.64     0.24     0.31
 HUB    13.07     0.00    -0.02   266.64    -0.09   266.64     0.24     0.29

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    43.72    47.36    -3.64   254.87   368.92    10.01   514.64   507.42    47.78
 MEAN   39.71    44.80    -5.09   221.38   346.62    10.01   514.64   507.42    47.78
 HUB    34.31    38.84    -4.53   181.83   322.79    10.01   514.64   507.42    47.78

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   293.45    40.47   290.64  1103.90      0.27     2.05     1.78     7.43
 MEAN   15.50   297.01    62.62   290.33  1104.29      0.27     2.13     1.86     5.75
 HUB    12.59   314.27   120.32   290.33  1104.68      0.28     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   249.58   358.05   209.12     0.32   727.66      0.92     0.78
 MEAN  215.60   328.17   152.98     0.30   971.99      0.92     0.78     0.78     1.13
 HUB   175.15   295.46    54.83     0.27  1516.06      0.92     0.78

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.51     1.01    10.02   521.84     1.00   515.05   508.95    48.51
 MEAN   10.54     1.01    10.04   522.37     1.00   515.42   509.23    47.95
 HUB    10.61     1.02    10.04   523.57     1.01   515.78   510.05    47.35

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     7.93    35.73    31.50     4.23     0.93     0.07     1.40
 MEAN   12.17    27.79    23.50     4.29     0.88     0.11     1.64
 HUB    22.51    10.69     6.50     4.19     0.88     0.18     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.848       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   337.4588    63.7726   331.3781  1102.3337     0.3061    -0.2707     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.5461     9.8945   513.6191   510.2328    50.8154    10.8932    33.0000    22.1068
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   345.5078    78.8970   336.3791  1101.8665     0.3136    -0.3897     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.5082     9.8285   513.1874   510.4366   410.5396     0.0922     0.0713

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   336.4613     0.0000   336.4613  1102.3848     0.3052    -0.0852     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.8390   513.6743   510.4241     0.0000     0.0600     0.1406    -0.3696

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.3540    10.4829     1.0059   522.5940     2.3514   490.0721     3.7990

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  14920.457       0.240      41.635  504413.031   0.672240E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.0435   Tt4 =   522.5940   T1  =   500.8095

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    138403.27    386.2069     76.3865      1.1227      0.7362      6.8205      1.0435     37.3740
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5µm, 2g/m^3, ISA +27R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 10% 39000 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.527   EfDer =  0.954    SH =  0.893968E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     26.270    2448.484       4.265     467.823       1.000       1.000       0.980
  W Kg/sec =  11.941  Wdry =  26.247  WH2O = 0.023  lbm/sec   H2O =   0.347g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     85.998    2578.165       1.380       0.249      53.377      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  65126.258   20605.740       3.302     831.557     251.855     619.754       2.461

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   187.96    -0.06   187.96     0.18     0.46   464.14
 MEAN    17.06     0.00    -0.02   187.96    -0.06   187.96     0.18     0.39
 HUB     12.51     0.00    -0.02   187.96    -0.06   187.96     0.18     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.91    50.47    16.44   440.80   479.26     4.17   464.99   457.60    21.33
 MEAN    62.73    47.20    15.53   364.53   410.19     4.17   464.99   457.60    21.33
 HUB     54.89    38.62    16.27   267.30   326.83     4.17   464.99   457.60    21.33

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   394.91   304.50   251.46  1063.24      0.37     7.29     6.52    16.04
 MEAN    18.04   399.47   307.65   254.81  1060.11      0.38     7.43     6.80    12.53
 HUB     15.00   432.44   345.98   259.43  1056.27      0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    440.80   286.03   136.30     0.27  6283.23      0.92     0.87
 MEAN   385.38   266.40    77.73     0.25  5549.92      0.92     0.87     0.87     1.77
 HUB    320.51   260.68    25.47     0.25  5190.52      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.92     1.15     4.48   489.37     1.05   476.85   472.91    19.78
 MEAN     4.84     1.13     4.39   486.85     1.04   474.05   471.64    21.92
 HUB      4.80     1.13     4.28   485.62     1.04   470.62   471.40    24.88

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.45    28.46    24.20     4.26     0.93     0.58     1.80
 MEAN    50.37    16.96    12.70     4.26     0.95     0.52     2.22
 HUB     53.14    -5.61    -9.30     3.69     0.95     0.39     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.954       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   411.0974   307.0542   273.3474  1059.6848     0.3879    -0.0357     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8491     4.3773   473.7371   472.2051    23.1020    48.3237    35.4000   -12.9237

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   271.1691    66.3362   262.9300  1068.1866     0.2539     0.5172     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8370     4.6278   481.3876   471.1437   554.9116     0.0361     0.6100

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   270.0914     0.0000   270.0914  1068.2029     0.2528     0.4864     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.6068	481.4362	471.9162	0.0000	0.0600	0.0867	0.4723

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8137	4.8132	1.1287	487.2784	19.4569	167.5380	1.2987

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
121419.047	0.625	180.254	271081.844	0.172862E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =15.095 EfDer = 0.958 SH = 0.267395E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.270	2448.484	4.813	487.278	1.000	1.000	0.980

W Kg/sec = 11.941 Wdry = 26.200 WH2O = 0.070 lbm/sec H2O = 1.113g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
77.764	2526.195	1.378	0.250	53.435	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60808.711	20591.279	2.590	590.487	227.980	468.502	2.055

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	247.14	-0.09	247.14	0.23	0.47	453.02
MEAN	18.08	0.00	-0.02	247.14	-0.09	247.14	0.23	0.43	
HUB	15.21	0.00	-0.02	247.14	-0.09	247.14	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.63	46.36	14.27	439.09	503.94	4.64	482.40	474.38	33.02
MEAN	57.40	42.30	15.10	386.28	458.64	4.64	482.40	474.38	33.02
HUB	52.76	37.84	14.92	324.99	408.35	4.64	482.40	474.38	33.02

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	363.22	253.54	260.09	1082.30	0.34	2.33	2.04	9.02
MEAN	18.01	362.69	250.01	262.75	1079.81	0.34	2.40	2.13	7.35
HUB	15.22	384.22	277.54	265.70	1077.36	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	436.32	317.89	182.78	0.29	5179.03	0.92	0.88		
MEAN	384.82	295.31	134.81	0.27	4504.27	0.92	0.88	0.88	1.71
HUB	325.27	269.96	47.73	0.25	4226.23	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.39	1.12	5.00	504.94	1.04	494.41	484.69	23.11
MEAN	5.32	1.10	4.92	502.64	1.03	492.14	483.65	24.94
HUB	5.28	1.10	4.85	501.69	1.03	489.91	483.56	26.87

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	44.27	35.10	31.50	3.60	0.93	0.55	1.40
MEAN	43.58	27.16	23.50	3.66	0.95	0.52	1.63
HUB	46.25	10.18	6.50	3.68	0.95	0.51	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.958	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	387.7487	250.7154	295.7886	1078.6195	0.3595	-0.1064	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3270	4.8785	491.0978	484.3220	26.0627	40.2852	30.6000	-9.6852

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	286.0433	60.6432	279.5410	1084.5966	0.2637	0.3713	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.3206	5.0733	496.5626	483.0670	491.5697	0.0257	0.4672

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	296.5269	0.0000	296.5269	1084.0463	0.2735	0.3583	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0392	496.0768	483.5197	0.0000	0.0600	0.0666	0.2883

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8309	5.3038	1.1019	503.0863	15.8092	188.4658	1.4610

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
99139.648	0.521	147.179	246287.469	0.307941E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.113 EfDer = 0.973 SH = 0.365007E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.270	2448.484	5.304	503.086	1.000	1.000	0.980

W Kg/sec = 11.941 Wdry = 26.174 WH2O = 0.096 lbm/sec H2O = 1.620g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
71.706	2486.189	1.377	0.251	53.467	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
57004.727	20583.316	2.593	545.479	210.359	424.468	2.018

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	250.80	-0.09	250.80	0.23	0.46	435.43
MEAN	17.74	0.00	-0.02	250.80	-0.09	250.80	0.23	0.42	
HUB	15.05	0.00	-0.02	250.80	-0.09	250.80	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.68	46.36	13.32	428.84	496.86	5.11	498.08	484.35	26.27
MEAN	56.51	43.40	13.11	379.02	454.56	5.11	498.08	484.35	26.27
HUB	52.06	38.84	13.22	321.57	407.88	5.11	498.08	484.35	26.27

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	354.95	237.39	263.88	1098.01	0.32	2.26	1.98	8.75
MEAN	17.51	356.44	237.01	266.23	1095.89	0.33	2.34	2.07	6.78
HUB	14.85	379.96	268.53	268.82	1093.80	0.35	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	423.28	322.78	185.89	0.29	4704.47	0.92	0.89		
MEAN	374.06	299.44	137.05	0.27	4150.76	0.92	0.89	0.89	1.66
HUB	317.30	273.21	48.77	0.25	3988.94	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.87	1.11	5.47	519.08	1.03	509.06	493.07	19.65
MEAN	5.80	1.09	5.40	517.19	1.03	507.09	492.32	20.89
HUB	5.78	1.09	5.33	516.64	1.03	505.16	492.48	22.17

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.97	35.16	31.50	3.66	0.93	0.52	1.40
MEAN	41.68	27.24	23.50	3.74	0.94	0.50	1.62
HUB	44.97	10.28	6.50	3.78	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.973	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	382.6859	238.5651	299.2243	1094.6611	0.3496	-0.1143	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.8160	5.3520	505.9986	493.0124	21.8170	38.5646	31.5000	-7.0646

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	294.3151	64.2029	287.2270	1099.7843	0.2676	0.3208	2.3726

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8119     5.5342   510.7542   491.8804   451.3937     0.0199     0.4421

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   299.3273     0.0000   299.3273  1099.5139     0.2722     0.3438     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5115   510.5193   492.3112     0.0000     0.0600     0.0532     0.2671

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8518     5.7979     1.0931   517.6379    14.5527   193.6946     1.5015

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  91559.711       0.511     135.926  244832.781   0.419094E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =11.531   EfDer =  0.983    SH =  0.494463E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.270    2448.484       5.798     517.637       1.000       1.000       0.980
 W Kg/sec =  11.941  Wdry =  26.140  WH2O = 0.130  lbm/sec   H2O =   2.332g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     66.538    2450.995       1.375       0.252      53.509      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  53658.781   20572.715       2.628     513.330     195.353     395.845       2.026

ROTOR LEADING EDGE CONDITIONS, STAGE   4

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    19.26     0.00    -0.02   250.86    -0.09   250.86     0.23     0.44   411.94
 MEAN   16.97     0.00    -0.02   250.86    -0.09   250.86     0.23     0.40
 HUB    14.32     0.00    -0.02   250.86    -0.09   250.86     0.23     0.36

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    58.64    46.36    12.28   411.53   482.03     5.60   512.65   493.23    22.40
 MEAN   55.33    43.80    11.53   362.61   441.00     5.60   512.65   493.23    22.40
 HUB    50.66    37.84    12.82   305.98   395.73     5.60   512.65   493.23    22.40

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    18.88   341.57   217.75   263.17  1111.99      0.31     2.16     1.89     8.34
 MEAN   16.57   343.01   217.44   265.28  1110.08      0.31     2.24     1.97     6.35
 HUB    13.89   365.07   248.32   267.60  1108.20      0.33     2.26     2.10     4.19

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   403.41   322.07   185.66     0.29  4112.76      0.92     0.90
 MEAN  354.13   298.43   136.69     0.27  3605.32      0.92     0.90     0.90     1.62
 HUB   296.79   271.95    48.46     0.25  3450.47      0.92     0.90

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.33     1.09     5.93   531.56     1.03   522.32   500.42    17.75
 MEAN    6.26     1.08     5.87   529.84     1.02   520.52   499.79    18.70
 HUB     6.24     1.08     5.80   529.32     1.02   518.76   499.95    19.67

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    39.61    35.20    31.50     3.70     0.93     0.49     1.40
 MEAN   39.34    27.26    23.50     3.76     0.94     0.47     1.62
 HUB    42.86    10.27     6.50     3.77     0.94     0.47     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.983       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   363.9555   218.6649   290.9455  1109.2032     0.3281    -0.0905     2.1803

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.2732    5.8300   519.7535   500.3719    19.3006    36.9273    32.4000    -4.5273
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   292.0495    65.4982   284.6100  1113.1674     0.2624     0.2835     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2710     5.9828   523.4848   499.4377   432.2457     0.0153     0.4205

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   289.7361     0.0000   289.7361  1113.2506     0.2603     0.3304     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9764   523.5783   499.6871     0.0000     0.0600     0.0436     0.2679

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8672     6.2594     1.0796   530.2205    12.6031   208.6822     1.6177

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  79621.367       0.489     118.203  250634.297   0.553035E-02

Melt Ratio at Stator LE, Throat, TE
0.60906E-01 0.10633E+00 0.27141E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =10.080   EfDer =  0.991    SH =  0.614518E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.270    2448.484       6.259     530.212       1.000       1.000       0.980
 W Kg/sec =  11.941  Wdry =  26.109  WH2O = 0.161  lbm/sec   H2O =   3.061g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.377    2421.738       1.374       0.253      53.548      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50799.332   20562.848       2.781     509.668     183.273     384.739       2.099

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   239.20    -0.08   239.20     0.21     0.41   387.16
 MEAN    15.91     0.00    -0.02   239.20    -0.08   239.20     0.21     0.37
 HUB     13.07     0.00    -0.02   239.20    -0.08   239.20     0.21     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.58    47.36    11.22   391.44   458.81     6.07   525.70   500.14    18.94
 MEAN    54.88    44.80    10.08   340.01   415.79     6.07   525.70   500.14    18.94
 HUB     49.43    38.84    10.59   279.27   367.77     6.07   525.70   500.14    18.94

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   324.29   204.69   251.53  1124.45      0.29     2.05     1.78     7.43
 MEAN    15.50   322.82   199.75   253.60  1122.48      0.29     2.13     1.86     5.75
 HUB     12.59   339.11   222.63   255.80  1120.54      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    383.32   308.51   178.64     0.27  3673.63      0.92     0.91
 MEAN   331.14   285.61   131.39     0.25  3096.98      0.92     0.91     0.91     1.61
 HUB    269.01   259.97    46.38     0.23  2804.01      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.76     1.08     6.39   542.59     1.02   534.29   506.05    15.31
 MEAN     6.68     1.07     6.31   540.64     1.02   532.42   505.34    16.11
 HUB      6.64     1.06     6.24   539.66     1.02   530.58   505.23    16.94

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.14    35.38    31.50     3.88     0.93     0.49     1.40
 MEAN    38.23    27.39    23.50     3.89     0.94     0.46     1.64
 HUB     41.03    10.28     6.50     3.78     0.94     0.44     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.991       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   353.0882   203.4145   288.6067  1121.0751     0.3150    -0.1697     2.0437
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    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6856     6.2493   531.1183   505.9444    16.7542    35.1768    33.0000    -2.1768

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   294.8446    67.3280   287.0545  1124.1947     0.2623     0.1654     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6834     6.3760   534.0842   505.1514   410.5396     0.0258     0.3962

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   286.7743     0.0000   286.7743  1124.5500     0.2550     0.3196     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3887   534.4326   505.3169     0.0000     0.0600     0.0382     0.1988

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8801     6.6787     1.0670   540.9190    10.7517   228.1724     1.7688

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  68151.406       0.464     101.175  262949.188   0.656970E-02

Melt Ratio at Stator LE, Throat, TE
0.79927E+00 0.88442E+00 0.10000E+01
 trTOT =     1.1562   Tt4 =   540.9190   T1  =   467.8228

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    459891.19    682.7354     85.9985      1.5661      0.8347     15.5266      1.1562     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 38334 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.594   EfDer =  0.953    SH =  0.784275E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.344    2371.140       4.199     461.513       1.000       1.000       0.980
  W Kg/sec =  11.520  Wdry =  25.324  WH2O = 0.020  lbm/sec   H2O =   0.304g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.686    2513.735       1.381       0.249      53.374      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  62886.816   19880.031       3.393     831.557     245.064     619.754       2.529

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   181.50    -0.06   181.50     0.17     0.44   452.54
 MEAN    17.06     0.00    -0.02   181.50    -0.06   181.50     0.17     0.38
 HUB     12.51     0.00    -0.02   181.50    -0.06   181.50     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.97    50.47    16.50   426.88   463.92     4.11   458.87   453.31    24.51
 MEAN    62.79    47.20    15.59   353.01   396.99     4.11   458.87   453.31    24.51
 HUB     54.97    38.62    16.35   258.86   316.20     4.11   458.87   453.31    24.51

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   382.44   294.98   243.41  1055.60      0.36     7.29     6.52    16.04
 MEAN    18.04   386.76   298.05   246.47  1052.65      0.37     7.43     6.80    12.53
 HUB     15.00   418.44   335.03   250.71  1049.03      0.40     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    426.88   276.84   131.90     0.26  6086.76      0.92     0.87
 MEAN   373.20   257.67    75.15     0.24  5376.75      0.92     0.87     0.87     1.77
 HUB    310.38   251.91    24.64     0.24  5026.16      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.81     1.15     4.40   481.73     1.04   469.99   468.27    22.55
 MEAN     4.74     1.13     4.32   479.37     1.04   467.37   466.99    24.92
 HUB      4.70     1.12     4.22   478.21     1.04   464.15   466.70    28.17

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.47    28.45    24.20     4.25     0.93     0.58     1.80
 MEAN    50.41    16.96    12.70     4.26     0.95     0.52     2.22
 HUB     53.19    -5.61    -9.30     3.69     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.953       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   397.9608   297.4737   264.3524  1052.2552     0.3782    -0.0358     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.7450     4.3047   467.0730   467.5161    26.1876    48.3738    35.4000   -12.9738

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   262.7549    64.2779   254.7715  1060.2738     0.2478     0.5175     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.7340     4.5386   474.2364   466.5587   554.9116     0.0353     0.6097

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   261.6761     0.0000   261.6761  1060.2882     0.2468     0.4857     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.5186   474.2833   467.2465     0.0000     0.0600     0.0871     0.4715
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8132     4.7114     1.1219   479.7711    18.2589   167.2975     1.2969

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 113867.773       0.625     163.083  263989.781   0.146630E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.080   EfDer =  0.958    SH =  0.222852E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.344    2371.140       4.711     479.770       1.000       1.000       0.980
 W Kg/sec =  11.520  Wdry =  25.288  WH2O = 0.056  lbm/sec   H2O =   0.923g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.051    2465.462       1.379       0.250      53.421      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58920.363   19868.721       2.649     590.487     222.898     468.502       2.102

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   239.47    -0.08   239.47     0.23     0.46   442.12
 MEAN    18.08     0.00    -0.02   239.47    -0.08   239.47     0.23     0.42
 HUB     15.21     0.00    -0.02   239.47    -0.08   239.47     0.23     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.62    46.36    14.26   425.22   488.09     4.55   475.19   469.42    36.77
 MEAN    57.38    42.30    15.08   374.08   444.23     4.55   475.19   469.42    36.77
 HUB     52.74    37.84    14.90   314.73   395.54     4.55   475.19   469.42    36.77

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950       77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   351.96   245.04   252.65  1073.62      0.33     2.33     2.04     9.02
 MEAN    18.01   351.49   241.81   255.10  1071.28      0.33     2.40     2.13     7.35
 HUB     15.22   372.37   268.68   257.82  1068.97      0.35     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    422.53   308.77   177.49     0.29  5005.41      0.92     0.88
 MEAN   372.66   286.70   130.85     0.27  4356.48      0.92     0.88     0.88     1.71
 HUB    315.00   261.95    46.31     0.25  4091.41      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.25     1.11     4.88   496.32     1.03   486.42   479.60    25.96
 MEAN     5.18     1.10     4.81   494.18     1.03   484.30   478.56    27.96
 HUB      5.15     1.09     4.74   493.30     1.03   482.22   478.44    30.06

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     44.12    35.09    31.50     3.59     0.93     0.55     1.40
 MEAN    43.47    27.16    23.50     3.66     0.95     0.52     1.63
 HUB     46.18    10.18     6.50     3.68     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.958       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   375.7929   242.4889   287.0878  1070.1410     0.3512    -0.1068     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.1891     4.7710   483.3212   479.1840    29.1968    40.1861    30.6000    -9.5861

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   278.0208    58.9424   271.7008  1075.7705     0.2584     0.3688     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.1834     4.9516   488.4266   478.0636   491.5697     0.0249     0.4647

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.8235   288.1395     0.0000   288.1395  1075.2465     0.2680     0.3559     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9198	487.9702	478.4709	0.0000	0.0600	0.0661	0.2855

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8313	5.1677	1.0969	494.5990	14.8292	188.7069	1.4628

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
92851.977	0.520	132.984	240041.750	0.255595E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.014 EfDer = 0.974 SH = 0.301584E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.344	2371.140	5.168	494.599	1.000	1.000	0.980

W Kg/sec = 11.520 Wdry = 25.268 WH2O = 0.076 lbm/sec H2O = 1.329g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.399	2428.224	1.378	0.251	53.446	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55412.246	19862.533	2.642	545.479	206.443	424.468	2.056

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	243.79	-0.08	243.79	0.23	0.45	425.28
MEAN	17.74	0.00	-0.02	243.79	-0.08	243.79	0.23	0.41	
HUB	15.05	0.00	-0.02	243.79	-0.08	243.79	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.59	46.36	13.23	415.29	481.63	4.99	489.86	479.21	29.41
MEAN	56.41	43.40	13.01	367.05	440.70	4.99	489.86	479.21	29.41
HUB	51.95	38.84	13.11	311.42	395.56	4.99	489.86	479.21	29.41

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	344.22	228.87	257.10	1088.44	0.32	2.26	1.98	8.75
MEAN	17.51	345.79	228.81	259.26	1086.45	0.32	2.34	2.07	6.78
HUB	14.85	368.76	259.84	261.65	1084.49	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	409.91	314.44	181.04	0.29	4535.69	0.92	0.89		
MEAN	362.25	291.59	133.43	0.27	4007.21	0.92	0.89	0.89	1.66
HUB	307.28	265.92	47.43	0.25	3859.94	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.69	1.10	5.32	509.56	1.03	500.11	487.79	22.16
MEAN	5.63	1.09	5.25	507.82	1.03	498.29	487.05	23.52
HUB	5.61	1.09	5.19	507.33	1.03	496.49	487.18	24.92

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.68	35.15	31.50	3.65	0.93	0.52	1.40
MEAN	41.43	27.23	23.50	3.73	0.94	0.50	1.62
HUB	44.80	10.28	6.50	3.78	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.974	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	371.3608	230.3142	291.3146	1085.2775	0.3422	-0.1151	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6421	5.2096	497.2501	487.6970	24.5561	38.3300	31.5000	-6.8300

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	286.8960	62.5844	279.9866	1090.0924	0.2632	0.3156	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6385	5.3775	501.6788	486.6848	451.3937	0.0191	0.4375

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	291.7315	0.0000	291.7315	1089.8352	0.2677	0.3397	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3565	501.4572	487.0739	0.0000	0.0600	0.0521	0.2620

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8530	5.6256	1.0886	508.2337	13.6357	194.4956	1.5077

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
85610.570	0.510	122.613	238893.641	0.345288E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.352 EfDer = 0.984 SH = 0.405724E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.344	2371.140	5.626	508.233	1.000	1.000	0.980

W Kg/sec = 11.520 Wdry = 25.241 WH2O = 0.103 lbm/sec H2O = 1.893g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.554	2395.430	1.376	0.251	53.480	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52310.883	19854.328	2.669	513.330	192.360	395.845	2.058

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	244.56	-0.08	244.56	0.22	0.43	402.60
MEAN	16.97	0.00	-0.02	244.56	-0.08	244.56	0.22	0.39	
HUB	14.32	0.00	-0.02	244.56	-0.08	244.56	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.47	46.36	12.11	398.53	467.66	5.44	503.48	487.89	25.18
MEAN	55.15	43.80	11.35	351.16	428.00	5.44	503.48	487.89	25.18
HUB	50.47	37.84	12.63	296.31	384.26	5.44	503.48	487.89	25.18

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	331.54	209.36	257.08	1101.64	0.30	2.16	1.89	8.34
MEAN	16.57	333.14	209.50	259.03	1099.85	0.30	2.24	1.97	6.35
HUB	13.89	354.77	240.11	261.16	1098.09	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	390.67	314.58	181.31	0.29	3954.33	0.92	0.90		
MEAN	342.95	291.39	133.45	0.26	3473.61	0.92	0.90	0.90	1.61
HUB	287.41	265.41	47.30	0.24	3336.36	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.11	1.09	5.75	521.23	1.03	512.50	494.97	20.13
MEAN	6.05	1.08	5.69	519.65	1.02	510.84	494.35	21.17
HUB	6.04	1.07	5.62	519.20	1.02	509.20	494.50	22.24

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	39.16	35.19	31.50	3.69	0.93	0.49	1.40
MEAN	38.97	27.26	23.50	3.76	0.94	0.47	1.62
HUB	42.60	10.27	6.50	3.77	0.94	0.47	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.984	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	353.6414	210.6756	284.0388	1099.0132	0.3218	-0.0916	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.0641	5.6510	510.1018	494.9006	21.8596	36.5649	32.4000	-4.1649

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	285.4078	64.0086	278.1375	1102.7273	0.2588	0.2763	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.0623	5.7909	513.5637	494.0885	432.2457	0.0147	0.4141

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	283.1421	0.0000	283.1421	1102.8226	0.2567	0.3243	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.7850	513.6672	494.4251	0.0000	0.0600	0.0425	0.2607

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8673	6.0516	1.0757	520.0286	11.7957	210.1396	1.6290

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
74310.555	0.487	106.428	244795.203	0.461150E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.824 EfDer = 0.992 SH = 0.538575E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.344	2371.140	6.052	520.028	1.000	1.000	0.980

W Kg/sec = 11.520 Wdry = 25.208 WH2O = 0.136 lbm/sec H2O = 2.647g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
61.642	2368.109	1.375	0.252	53.523	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49664.629	19843.820	2.815	509.668	181.028	384.739	2.125

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	233.85	-0.08	233.85	0.21	0.40	378.58
MEAN	15.91	0.00	-0.02	233.85	-0.08	233.85	0.21	0.37	
HUB	13.07	0.00	-0.02	233.85	-0.08	233.85	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.33	47.36	10.97	379.08	445.48	5.87	515.70	495.33	22.89
MEAN	54.62	44.80	9.82	329.27	403.93	5.87	515.70	495.33	22.89
HUB	49.16	38.84	10.32	270.45	357.59	5.87	515.70	495.33	22.89

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	314.98	196.28	246.35	1113.39	0.28	2.05	1.78	7.43
MEAN	15.50	313.88	192.06	248.26	1111.55	0.28	2.13	1.86	5.75
HUB	12.59	330.05	215.14	250.29	1109.74	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	371.22	302.14	174.94	0.27	3522.74	0.92	0.91		
MEAN	320.68	279.60	128.61	0.25	2977.80	0.92	0.91	0.91	1.60
HUB	260.51	254.37	45.37	0.23	2709.69	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.51	1.08	6.16	531.56	1.02	523.71	501.30	18.91
MEAN	6.44	1.06	6.10	529.77	1.02	521.98	500.61	19.87
HUB	6.40	1.06	6.03	528.90	1.02	520.28	500.52	20.86

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.55	35.38	31.50	3.88	0.93	0.48	1.40
MEAN	37.73	27.39	23.50	3.89	0.94	0.45	1.64
HUB	40.68	10.27	6.50	3.77	0.94	0.44	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	343.5902	195.5852	282.4901	1110.1843	0.3095	-0.1717	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.4435	6.0366	520.7388	501.2484	20.7345	34.6972	33.0000	-1.6972

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   288.8376    65.9563   281.2062  1113.0863     0.2595     0.1558     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.4417     6.1519   523.4720   500.5298   410.5396     0.0249     0.3882

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   280.9701     0.0000   280.9701  1113.4316     0.2523     0.3114     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.1633   523.8083   500.6618     0.0000     0.0600     0.0376     0.1881

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8800     6.4372     1.0637   530.0475    10.0480   230.2227     1.7847

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  63557.008       0.461      91.027  257097.906   0.587465E-02

Melt Ratio at Stator LE, Throat, TE
0.20836E+00 0.26569E+00 0.45252E+00
 trTOT =     1.1485   Tt4 =   530.0475   T1  =   461.5134

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    430197.88    616.1348     83.6861      1.5329      0.8352     15.5941      1.1485     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 37357 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.612   EfDer =  0.953    SH =  0.712429E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.936    2340.415       4.337     459.583       1.000       1.000       0.980
  W Kg/sec =  11.789  Wdry =  25.917  WH2O = 0.018  lbm/sec   H2O =   0.287g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.746    2486.369       1.381       0.249      53.371      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  62025.441   20344.822       3.432     831.557     242.299     619.754       2.558

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   179.01    -0.06   179.01     0.17     0.44   447.61
 MEAN    17.06     0.00    -0.02   179.01    -0.06   179.01     0.17     0.38
 HUB     12.51     0.00    -0.02   179.01    -0.06   179.01     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.98    50.47    16.51   421.35   457.85     4.25   457.01   452.08    25.13
 MEAN    62.81    47.20    15.61   348.44   391.79     4.25   457.01   452.08    25.13
 HUB     54.99    38.62    16.37   255.50   312.03     4.25   457.01   452.08    25.13

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   377.51   291.14   240.31  1053.19      0.36     7.29     6.52    16.04
 MEAN    18.04   381.73   294.18   243.27  1050.31      0.36     7.43     6.80    12.53
 HUB     15.00   412.95   330.67   247.35  1046.78      0.39     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    421.35   273.32   130.20     0.26  6007.58      0.92     0.87
 MEAN   368.37   254.33    74.19     0.24  5306.83      0.92     0.87     0.87     1.77
 HUB    306.36   248.54    24.31     0.24  4960.84      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.95     1.14     4.54   479.28     1.04   467.84   466.89    23.14
 MEAN     4.88     1.13     4.46   476.99     1.04   465.29   465.60    25.53
 HUB      4.84     1.12     4.36   475.85     1.04   462.16   465.28    28.80

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.46    28.45    24.20     4.25     0.93     0.58     1.80
 MEAN    50.41    16.96    12.70     4.26     0.95     0.52     2.22
 HUB     53.20    -5.61    -9.30     3.69     0.95     0.39     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.953       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   392.7730   293.6056   260.8954  1049.9338     0.3741    -0.0358     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8879     4.4435   464.9998   466.1010    26.8085    48.3760    35.4000   -12.9760

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   259.5317    63.4894   251.6462  1057.7570     0.2454     0.5173     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8769     4.6795   471.9714   465.2184   554.9116     0.0349     0.6092

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   258.4492     0.0000   258.4492  1057.7725     0.2443     0.4852     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.6591   472.0178   465.8537     0.0000     0.0600     0.0871     0.4710
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8132     4.8539     1.1192   477.3730    17.7916   167.2555     1.2966

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 110917.617       0.625     162.567  270912.844   0.131918E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.063   EfDer =  0.958    SH =  0.199593E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.936    2340.415       4.854     477.372       1.000       1.000       0.980
 W Kg/sec =  11.789  Wdry =  25.884  WH2O = 0.052  lbm/sec   H2O =   0.857g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.352    2439.619       1.379       0.250      53.413      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58195.629   20334.539       2.674     590.487     220.820     468.502       2.122

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   236.52    -0.08   236.52     0.22     0.46   437.49
 MEAN    18.08     0.00    -0.02   236.52    -0.08   236.52     0.22     0.41
 HUB     15.21     0.00    -0.02   236.52    -0.08   236.52     0.22     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.60    46.36    14.24   419.71   481.84     4.69   472.90   467.87    37.53
 MEAN    57.36    42.30    15.06   369.23   438.56     4.69   472.90   467.87    37.53
 HUB     52.72    37.84    14.88   310.65   390.51     4.69   472.90   467.87    37.53

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950       77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   347.53   241.60   249.81  1070.80      0.32     2.33     2.04     9.02
 MEAN    18.01   347.10   238.51   252.17  1068.51      0.32     2.40     2.13     7.35
 HUB     15.22   367.74   265.16   254.80  1066.26      0.34     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    417.06   305.27   175.45     0.29  4935.20      0.92     0.88
 MEAN   367.83   283.40   129.32     0.27  4297.11      0.92     0.88     0.88     1.71
 HUB    310.91   258.88    45.76     0.24  4037.75      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.40     1.11     5.02   493.49     1.03   483.83   478.03    26.65
 MEAN     5.32     1.10     4.95   491.41     1.03   481.77   476.98    28.66
 HUB      5.30     1.09     4.88   490.56     1.03   479.75   476.83    30.79

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     44.04    35.08    31.50     3.58     0.93     0.55     1.40
 MEAN    43.41    27.15    23.50     3.65     0.95     0.52     1.63
 HUB     46.14    10.18     6.50     3.68     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.958       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   371.1153   239.1843   283.7559  1067.4010     0.3477    -0.1071     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3353     4.9133   480.8127   477.5764    29.9183    40.1283    30.6000    -9.5283

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   274.9565    58.2927   268.7062  1072.8915     0.2563     0.3675     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3297     5.0952   485.7780   476.5392   491.5697     0.0245     0.4634

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   284.9335     0.0000   284.9335  1072.3781     0.2657     0.3548     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0630	485.3326	476.9183	0.0000	0.0600	0.0657	0.2841

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8316	5.3138	1.0947	491.8197	14.4479	188.8713	1.4641

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
90396.781	0.520	132.491	246422.656	0.228646E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.961 EfDer = 0.974 SH = 0.269454E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.936	2340.415	5.314	491.819	1.000	1.000	0.980

W Kg/sec = 11.789 Wdry = 25.866 WH2O = 0.070 lbm/sec H2O = 1.228g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.865	2403.521	1.378	0.250	53.436	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54803.297	20328.926	2.663	545.479	204.836	424.468	2.072

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	241.12	-0.08	241.12	0.22	0.44	420.95
MEAN	17.74	0.00	-0.02	241.12	-0.08	241.12	0.22	0.41	
HUB	15.05	0.00	-0.02	241.12	-0.08	241.12	0.22	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.54	46.36	13.18	409.91	475.64	5.13	487.18	477.61	30.17
MEAN	56.36	43.40	12.96	362.29	435.26	5.13	487.18	477.61	30.17
HUB	51.90	38.84	13.06	307.38	390.73	5.13	487.18	477.61	30.17

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	339.97	225.39	254.52	1085.27	0.31	2.26	1.98	8.75
MEAN	17.51	341.61	225.49	256.61	1083.33	0.32	2.34	2.07	6.78
HUB	14.85	364.37	256.36	258.92	1081.43	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	404.60	311.29	179.21	0.29	4466.57	0.92	0.89		
MEAN	357.55	288.60	132.06	0.27	3949.10	0.92	0.89	0.89	1.65
HUB	303.30	263.14	46.93	0.24	3808.25	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.84	1.10	5.46	506.37	1.03	497.15	486.17	22.84
MEAN	5.78	1.09	5.40	504.69	1.03	495.38	485.41	24.21
HUB	5.76	1.08	5.33	504.23	1.03	493.64	485.53	25.63

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.53	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	41.31	27.23	23.50	3.73	0.94	0.50	1.62
HUB	44.72	10.27	6.50	3.77	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.974	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	366.9251	226.9737	288.3002	1082.1769	0.3391	-0.1156	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7910	5.3546	494.3626	486.0368	25.2729	38.2127	31.5000	-6.7127

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	284.0787	61.9698	277.2372	1086.8673	0.2614	0.3130	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7875	5.5231	498.6630	485.0975	451.3937	0.0188	0.4353

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	288.8449	0.0000	288.8449	1086.6150	0.2658	0.3377	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5020	498.4464	485.4610	0.0000	0.0600	0.0516	0.2595

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8537	5.7745	1.0867	505.0965	13.2777	194.9160	1.5110

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
83277.211	0.509	122.056	245358.891	0.308218E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.266 EfDer = 0.985 SH = 0.361733E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.936	2340.415	5.775	505.096	1.000	1.000	0.980

W Kg/sec = 11.789 Wdry = 25.842 WH2O = 0.094 lbm/sec H2O = 1.744g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.152	2371.722	1.377	0.251	53.466	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51798.398	20321.492	2.686	513.330	191.131	395.845	2.071

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	242.17	-0.08	242.17	0.22	0.42	398.62
MEAN	16.97	0.00	-0.02	242.17	-0.08	242.17	0.22	0.39	
HUB	14.32	0.00	-0.02	242.17	-0.08	242.17	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.39	46.36	12.03	393.37	462.00	5.58	500.43	486.22	25.93
MEAN	55.07	43.80	11.27	346.61	422.89	5.58	500.43	486.22	25.93
HUB	50.38	37.84	12.54	292.47	379.78	5.58	500.43	486.22	25.93

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	327.60	205.94	254.78	1098.16	0.30	2.16	1.89	8.34
MEAN	16.57	329.28	206.28	256.66	1096.42	0.30	2.24	1.97	6.35
HUB	13.89	350.78	236.88	258.72	1094.71	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	385.60	311.76	179.67	0.28	3889.70	0.92	0.90		
MEAN	338.50	288.72	132.22	0.26	3420.29	0.92	0.90	0.90	1.61
HUB	283.69	262.92	46.81	0.24	3291.43	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.26	1.08	5.90	517.73	1.03	509.20	493.27	20.79
MEAN	6.20	1.07	5.83	516.21	1.02	507.58	492.64	21.86
HUB	6.19	1.07	5.77	515.79	1.02	506.00	492.78	22.94

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.95	35.19	31.50	3.69	0.93	0.48	1.40
MEAN	38.79	27.26	23.50	3.76	0.94	0.47	1.62
HUB	42.48	10.26	6.50	3.76	0.94	0.47	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.985	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	349.6136	207.4409	281.4213	1095.5906	0.3191	-0.0920	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.2148	5.7980	506.8619	493.1763	22.5646	36.3946	32.4000	-3.9946

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	282.9038	63.4471	275.6974	1099.2023	0.2574	0.2727	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.2131	5.9379	510.2164	492.4214	432.2457	0.0144	0.4112

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	280.6465	0.0000	280.6465	1099.2979	0.2553	0.3215	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.9320	510.3186	492.7352	0.0000	0.0600	0.0420	0.2574

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8681	6.2024	1.0741	516.5773	11.4818	210.8375	1.6344

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
72231.953	0.486	105.867	251522.641	0.410729E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.709 EfDer = 0.993 SH = 0.479220E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.936	2340.415	6.202	516.577	1.000	1.000	0.980

W Kg/sec = 11.789 Wdry = 25.812 WH2O = 0.124 lbm/sec H2O = 2.432g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
61.343	2345.219	1.375	0.252	53.504	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49229.426	20311.998	2.830	509.668	180.085	384.739	2.136

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	231.81	-0.08	231.81	0.21	0.40	374.92
MEAN	15.91	0.00	-0.02	231.81	-0.08	231.81	0.21	0.36	
HUB	13.07	0.00	-0.02	231.81	-0.08	231.81	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.23	47.36	10.87	374.17	440.22	6.02	512.32	493.58	23.63
MEAN	54.51	44.80	9.71	325.01	399.27	6.02	512.32	493.58	23.63
HUB	49.04	38.84	10.20	266.94	353.60	6.02	512.32	493.58	23.63

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	311.32	192.87	244.38	1109.64	0.28	2.05	1.78	7.43
MEAN	15.50	310.38	188.97	246.22	1107.85	0.28	2.13	1.86	5.75
HUB	12.59	326.48	212.11	248.19	1106.09	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	366.41	299.72	173.53	0.27	3461.63	0.92	0.91		
MEAN	316.52	277.30	127.55	0.25	2929.87	0.92	0.91	0.91	1.59
HUB	257.14	252.24	45.03	0.23	2671.52	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.66	1.07	6.31	527.78	1.02	520.10	499.59	19.70
MEAN	6.59	1.06	6.25	526.06	1.02	518.43	498.89	20.69
HUB	6.56	1.06	6.18	525.23	1.02	516.78	498.80	21.71

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.28	35.38	31.50	3.88	0.93	0.47	1.40
MEAN	37.51	27.39	23.50	3.89	0.94	0.45	1.64
HUB	40.52	10.28	6.50	3.78	0.94	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.993	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	339.8774	192.4364	280.1515	1106.5020	0.3072	-0.1726	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.5953	6.1846	517.2058	499.5245	21.6220	34.4852	33.0000	-1.4852

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   286.5480    65.4335   278.9771  1109.3185     0.2583     0.1514     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.5937     6.2997   519.8497   498.8694   410.5396     0.0246     0.3846

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   278.7604     0.0000   278.7604  1109.6664     0.2512     0.3077     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3110   520.1877   499.0434     0.0000     0.0600     0.0374     0.1832

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8793     6.5891     1.0623   526.3397     9.7792   231.1906     1.7922

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  61749.730       0.460      90.504  264250.938   0.530462E-02

Melt Ratio at Stator LE, Throat, TE
0.71512E-01 0.10700E+00 0.24091E+00
 trTOT =     1.1453   Tt4 =   526.3397   T1  =   459.5827

   OVERALL EXIT CONDITIONS; ALL          5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    418573.28    613.4843     82.7456      1.5193      0.8357     15.6115      1.1453     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 34281 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.664   EfDer =  0.953    SH =  0.716928E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     27.847    2268.818       4.829     461.405       1.000       1.000       0.980
  W Kg/sec =  12.658  Wdry =  27.827  WH2O = 0.020  lbm/sec   H2O =   0.321g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     79.957    2405.546       1.381       0.249      53.372      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59993.355   21843.670       3.552     831.557     234.137     619.754       2.647

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   173.15    -0.06   173.15     0.17     0.43   433.06
 MEAN    17.06     0.00    -0.02   173.15    -0.06   173.15     0.17     0.36
 HUB     12.51     0.00    -0.02   173.15    -0.06   173.15     0.17     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.03    50.47    16.56   408.46   443.70     4.74   459.00   454.05    25.66
 MEAN    62.86    47.20    15.66   337.78   379.62     4.74   459.00   454.05    25.66
 HUB     55.05    38.62    16.43   247.69   302.26     4.74   459.00   454.05    25.66

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   366.04   282.21   233.11  1054.65      0.35     7.29     6.52    16.04
 MEAN    18.04   370.07   285.23   235.79  1051.96      0.35     7.43     6.80    12.53
 HUB     15.00   400.10   320.51   239.47  1048.66      0.38     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    408.46   265.10   126.25     0.25  5823.25      0.92     0.87
 MEAN   357.10   246.50    71.87     0.23  5145.38      0.92     0.87     0.87     1.77
 HUB    296.99   240.63    23.53     0.23  4808.47      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.47     1.13     5.04   479.92     1.04   469.16   468.09    23.76
 MEAN     5.39     1.12     4.96   477.76     1.04   466.77   466.84    26.04
 HUB      5.35     1.11     4.85   476.69     1.03   463.84   466.51    29.12

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.44    28.44    24.20     4.24     0.93     0.58     1.80
 MEAN    50.42    16.95    12.70     4.25     0.95     0.52     2.22
 HUB     53.23    -5.61    -9.30     3.69     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.953       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   380.7316   284.6728   252.8200  1051.6017     0.3620    -0.0360     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.4007     4.9390   466.4957   467.3143    27.2691    48.3915    35.4000   -12.9915

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   252.0898    61.6689   244.4304  1058.9187     0.2381     0.5169     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3898     5.1841   473.0251   466.5126   554.9116     0.0338     0.6081

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   250.9924     0.0000   250.9924  1058.9370     0.2370     0.4838     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.1624   473.0706   467.0942     0.0000     0.0600     0.0872     0.4695
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8127     5.3653     1.1112   478.1212    16.7173   167.0791     1.2952

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 104226.031       0.625     164.014  289706.469   0.127409E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.010   EfDer =  0.958    SH =  0.189264E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     27.847    2268.818       5.365     478.121       1.000       1.000       0.980
 W Kg/sec =  12.658  Wdry =  27.794  WH2O = 0.053  lbm/sec   H2O =   0.898g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.250    2363.137       1.379       0.250      53.410      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  56530.691   21833.559       2.751     590.487     214.647     468.502       2.183

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   229.76    -0.08   229.76     0.22     0.44   423.77
 MEAN    18.08     0.00    -0.02   229.76    -0.08   229.76     0.22     0.40
 HUB     15.21     0.00    -0.02   229.76    -0.08   229.76     0.22     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.55    46.36    14.19   406.87   467.33     5.19   473.90   468.97    37.72
 MEAN    57.31    42.30    15.01   357.93   425.40     5.19   473.90   468.97    37.72
 HUB     52.67    37.84    14.83   301.15   378.85     5.19   473.90   468.97    37.72

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950       77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   337.23   233.41   243.40  1071.11      0.31     2.33     2.04     9.02
 MEAN    18.01   336.93   230.71   245.54  1068.99      0.32     2.40     2.13     7.35
 HUB     15.22   357.05   256.93   247.93  1066.89      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    404.30   297.40   170.89     0.28  4767.92      0.92     0.88
 MEAN   356.58   275.92   125.87     0.26  4156.57      0.92     0.88     0.88     1.70
 HUB    301.40   251.88    44.47     0.24  3912.52      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.93     1.10     5.54   493.22     1.03   484.12   478.67    27.46
 MEAN     5.85     1.09     5.47   491.28     1.03   482.21   477.66    29.38
 HUB      5.82     1.09     5.39   490.51     1.03   480.32   477.51    31.40

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.80    35.07    31.50     3.57     0.93     0.54     1.40
 MEAN    43.22    27.14    23.50     3.64     0.95     0.52     1.63
 HUB     46.02    10.17     6.50     3.67     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.958       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   360.2955   231.3612   276.1971  1067.9373     0.3374    -0.1077     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8627     5.4247   481.2944   478.2202    30.6041    39.9518    30.6000    -9.3518

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   268.0900    56.8370   261.9958  1073.0574     0.2498     0.3635     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8573     5.6120   485.9264   477.2898   491.5697     0.0234     0.4595

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   277.7334     0.0000   277.7334  1072.5746     0.2589     0.3513     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5786	485.5065	477.6367	0.0000	0.0600	0.0647	0.2799

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8325	5.8408	1.0886	491.6717	13.5517	189.3716	1.4680

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
84767.125	0.519	133.393	263867.625	0.215450E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.803 EfDer = 0.975 SH = 0.252015E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.847	2268.818	5.841	491.671	1.000	1.000	0.980

W Kg/sec = 12.658 Wdry = 27.776 WH2O = 0.070 lbm/sec H2O = 1.265g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.234	2330.345	1.378	0.250	53.430	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53444.703	21828.148	2.727	545.479	200.036	424.468	2.122

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	235.14	-0.08	235.14	0.22	0.43	408.13
MEAN	17.74	0.00	-0.02	235.14	-0.08	235.14	0.22	0.39	
HUB	15.05	0.00	-0.02	235.14	-0.08	235.14	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.39	46.36	13.03	397.37	461.80	5.65	487.26	478.28	30.97
MEAN	56.20	43.40	12.80	351.21	422.72	5.65	487.26	478.28	30.97
HUB	51.73	38.84	12.89	297.98	379.64	5.65	487.26	478.28	30.97

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	330.24	217.04	248.90	1084.64	0.30	2.26	1.98	8.75
MEAN	17.51	332.05	217.63	250.80	1082.84	0.31	2.34	2.07	6.78
HUB	14.85	354.35	248.20	252.90	1081.07	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	392.22	304.37	175.18	0.28	4301.18	0.92	0.89		
MEAN	346.62	282.02	128.99	0.26	3811.30	0.92	0.89	0.89	1.64
HUB	294.02	257.01	45.81	0.24	3687.06	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.38	1.09	5.99	505.26	1.03	496.56	486.46	23.91
MEAN	6.32	1.08	5.93	503.72	1.02	494.92	485.75	25.24
HUB	6.30	1.08	5.86	503.32	1.02	493.30	485.86	26.61

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.09	35.14	31.50	3.64	0.93	0.51	1.40
MEAN	40.95	27.22	23.50	3.72	0.94	0.49	1.62
HUB	44.46	10.27	6.50	3.77	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.975	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	356.8327	219.0532	281.6830	1081.7369	0.3299	-0.1170	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3313	5.8785	493.9444	486.3304	26.3001	37.8707	31.5000	-6.3707

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	277.9821	60.6399	271.2874	1086.0946	0.2559	0.3054	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3281	6.0505	497.9375	485.4886	451.3937	0.0177	0.4289

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	282.5868	0.0000	282.5868	1085.8560	0.2602	0.3318	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.0287	497.7325	485.8210	0.0000	0.0600	0.0502	0.2522

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8554	6.3148	1.0812	504.1011	12.4303	196.1340	1.5204

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
77922.211	0.507	122.621	263144.531	0.286348E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.008 EfDer = 0.986 SH = 0.333534E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.847	2268.818	6.315	504.101	1.000	1.000	0.980

W Kg/sec = 12.658 Wdry = 27.754 WH2O = 0.093 lbm/sec H2O = 1.765g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
63.904	2301.437	1.377	0.251	53.456	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50696.602	21821.104	2.739	513.330	187.439	395.845	2.112

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	237.02	-0.08	237.02	0.22	0.41	386.80
MEAN	16.97	0.00	-0.02	237.02	-0.08	237.02	0.22	0.38	
HUB	14.32	0.00	-0.02	237.02	-0.08	237.02	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.14	46.36	11.78	381.33	449.06	6.11	499.63	486.52	27.01
MEAN	54.81	43.80	11.01	336.01	411.26	6.11	499.63	486.52	27.01
HUB	50.11	37.84	12.27	283.52	369.61	6.11	499.63	486.52	27.01

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	318.61	197.56	249.97	1096.66	0.29	2.16	1.89	8.34
MEAN	16.57	320.57	198.54	251.68	1095.06	0.29	2.24	1.97	6.35
HUB	13.89	341.73	229.11	253.56	1093.48	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	373.81	305.86	176.25	0.28	3731.43	0.92	0.90		
MEAN	328.15	283.10	129.61	0.26	3291.93	0.92	0.90	0.90	1.59
HUB	275.01	257.68	45.90	0.24	3183.49	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.81	1.08	6.43	515.86	1.02	507.78	493.25	22.00
MEAN	6.75	1.07	6.37	514.48	1.02	506.30	492.67	23.04
HUB	6.74	1.07	6.30	514.14	1.02	504.84	492.81	24.10

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.32	35.19	31.50	3.69	0.93	0.47	1.40
MEAN	38.27	27.25	23.50	3.75	0.94	0.46	1.62
HUB	42.10	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.986	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	340.5732	199.6547	275.9131	1094.2600	0.3112	-0.0937	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7650	6.3324	505.5974	493.1684	23.7613	35.8900	32.4000	-3.4900

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	277.7216	62.2848	270.6472	1097.5939	0.2530	0.2617	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7636	6.4737	508.6895	492.4963	432.2457	0.0136	0.4025

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	275.4766	0.0000	275.4766	1097.6885	0.2510	0.3131	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.4679	508.7892	492.7820	0.0000	0.0600	0.0408	0.2472

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8700	6.7527	1.0693	514.8248	10.7246	212.9550	1.6508

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
67410.609	0.482	106.080	270136.844	0.376372E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.362 EfDer = 0.994 SH = 0.435992E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.847	2268.818	6.753	514.824	1.000	1.000	0.980

W Kg/sec = 12.658 Wdry = 27.725 WH2O = 0.121 lbm/sec H2O = 2.419g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
60.392	2277.341	1.376	0.252	53.490	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
48336.641	21812.223	2.875	509.668	177.251	384.739	2.171

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	227.60	-0.08	227.60	0.21	0.39	364.07
MEAN	15.91	0.00	-0.02	227.60	-0.08	227.60	0.21	0.35	
HUB	13.07	0.00	-0.02	227.60	-0.08	227.60	0.21	0.31	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.90	47.36	10.54	362.72	428.28	6.56	510.71	493.55	24.86
MEAN	54.16	44.80	9.36	315.06	388.74	6.56	510.71	493.55	24.86
HUB	48.68	38.84	9.84	258.78	344.69	6.56	510.71	493.55	24.86

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	303.07	184.46	240.48	1107.39	0.27	2.05	1.78	7.43
MEAN	15.50	302.57	181.41	242.16	1105.74	0.27	2.13	1.86	5.75
HUB	12.59	318.69	205.06	243.95	1104.11	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	355.20	294.93	170.74	0.27	3310.58	0.92	0.91		
MEAN	306.84	272.71	125.43	0.25	2812.71	0.92	0.91	0.91	1.58
HUB	249.27	247.92	44.21	0.22	2582.73	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.22	1.07	6.86	525.23	1.02	517.94	499.29	21.00
MEAN	7.15	1.06	6.79	523.66	1.02	516.40	498.64	21.97
HUB	7.11	1.05	6.72	522.94	1.02	514.88	498.56	22.98

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.49	35.38	31.50	3.88	0.93	0.46	1.40
MEAN	36.84	27.38	23.50	3.88	0.93	0.44	1.64
HUB	40.05	10.27	6.50	3.77	0.93	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	331.6656	184.7392	275.4514	1104.4344	0.3003	-0.1752	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.1524	6.7257	515.2173	499.2310	22.9352	33.8489	33.0000	-0.8489

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   282.0485    64.4060   274.5965  1107.0106     0.2548     0.1366     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.1510     6.8404   517.6304   498.6548   410.5396     0.0237     0.3742

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   274.3943     0.0000   274.3943  1107.3502     0.2478     0.2967     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.8523   517.9587   498.8162     0.0000     0.0600     0.0368     0.1688

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8805     7.1461     1.0583   523.9276     9.1179   234.2848     1.8162

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57497.500       0.456      90.480  284158.781   0.480916E-02

Melt Ratio at Stator LE, Throat, TE
0.64056E-01 0.95984E-01 0.21751E+00
 trTOT =     1.1355   Tt4 =   523.9276   T1  =   461.4051

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    391823.50    616.5878     79.9566      1.4800      0.8371     15.6637     1.1355     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 30029 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =14.178   EfDer =  0.965    SH =  0.943266E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     31.857    2149.058       5.592     471.074       1.000       1.000       0.980
  W Kg/sec =  14.480  Wdry =  31.827  WH2O = 0.030  lbm/sec   H2O =   0.478g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     79.803    2255.067       1.380       0.249      53.379      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60507.898   24987.320       3.558     831.557     233.728     619.754       2.652

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   174.63    -0.06   174.63     0.17     0.40   405.97
 MEAN    17.06     0.00    -0.02   174.63    -0.06   174.63     0.17     0.35
 HUB     12.51     0.00    -0.02   174.63    -0.06   174.63     0.17     0.28

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.71    50.47    15.24   386.90   424.54     5.49   468.63   462.03    25.10
 MEAN    61.38    47.20    14.18   319.95   364.56     5.49   468.63   462.03    25.10
 HUB     53.34    38.62    14.72   234.61   292.52     5.49   468.63   462.03    25.10

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   350.93   259.37   236.39  1063.68      0.33     7.29     6.52    16.04
 MEAN    18.04   357.33   265.89   238.72  1061.41      0.34     7.43     6.80    12.53
 HUB     15.00   389.69   305.42   242.03  1058.52      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    386.90   268.59   127.53     0.25  5352.06      0.92     0.88
 MEAN   338.25   249.44    72.36     0.24  4796.58      0.92     0.88     0.88     1.67
 HUB    281.31   243.23    24.11     0.23  4582.00      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.23     1.11     5.78   487.17     1.03   477.30   474.09    24.11
 MEAN     6.16     1.10     5.70   485.50     1.03   475.26   473.19    25.96
 HUB      6.13     1.10     5.59   484.86     1.03   472.68   473.18    28.53

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     47.65    28.35    24.20     4.15     0.93     0.54     1.80
 MEAN    48.08    16.86    12.70     4.16     0.95     0.48     2.22
 HUB     51.60    -5.69    -9.30     3.61     0.95     0.36     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.965       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   368.7193   265.3711   255.9924  1061.0034     0.3475    -0.0413     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.1703     5.6824   474.9516   473.6670    27.1486    46.0306    35.4000   -10.6306

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   256.4999    62.7477   248.7065  1067.2493     0.2403     0.4764     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.1622     5.9227   480.5736   472.9157   554.9116     0.0269     0.5654

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   255.1144     0.0000   255.1144  1067.2869     0.2390     0.4548     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.9043   480.6315   473.4919     0.0000     0.0600     0.0722     0.4382
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8308     6.1403     1.0980   485.8442    14.7714   174.2629     1.3509

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  92186.977       0.616     165.961  326276.250   0.155746E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =13.149   EfDer =  0.973    SH =  0.221849E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.857    2149.058       6.140     485.844       1.000       1.000       0.980
 W Kg/sec =  14.480  Wdry =  31.786  WH2O = 0.071  lbm/sec   H2O =   1.185g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.811    2220.535       1.379       0.250      53.420      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57456.313   24974.764       2.729     590.487     216.342     468.502       2.166

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   233.52    -0.08   233.52     0.22     0.42   398.20
 MEAN    18.08     0.00    -0.02   233.52    -0.08   233.52     0.22     0.39
 HUB     15.21     0.00    -0.02   233.52    -0.08   233.52     0.22     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.79    46.36    12.43   385.40   450.69     5.94   481.49   475.36    36.47
 MEAN    55.45    42.30    13.15   339.04   411.74     5.94   481.49   475.36    36.47
 HUB     50.70    37.84    12.86   285.25   368.70     5.94   481.49   475.36    36.47

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950       77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   324.68   208.67   248.75  1077.71      0.30     2.33     2.04     9.02
 MEAN    18.01   326.68   209.61   250.57  1076.00      0.30     2.40     2.13     7.35
 HUB     15.22   348.71   240.41   252.59  1074.30      0.32     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    382.96   303.74   174.29     0.28  4262.59      0.92     0.89
 MEAN   337.76   281.44   128.15     0.26  3776.44      0.92     0.89     0.89     1.61
 HUB    285.49   256.58    45.09     0.24  3660.91      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.68     1.09     6.28   498.62     1.03   490.19   483.45    28.27
 MEAN     6.62     1.08     6.21   497.16     1.02   488.63   482.73    29.82
 HUB      6.60     1.08     6.14   496.81     1.02   487.10   482.84    31.40

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.99    35.02    31.50     3.52     0.93     0.49     1.40
 MEAN    39.91    27.09    23.50     3.59     0.94     0.47     1.63
 HUB     43.58    10.12     6.50     3.62     0.94     0.47     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.973       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   351.6508   210.1939   281.9163  1074.8823     0.3272    -0.1211     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6285     6.1617   487.6548   483.3077    31.0765    36.7078    30.6000    -6.1078

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   274.7548    58.2500   268.5091  1079.1078     0.2546     0.2996     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6254     6.3376   491.5012   482.4925   491.5697     0.0172     0.4056

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   284.4212     0.0000   284.4212  1078.6199     0.2637     0.3062     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.3046	491.0704	482.8432	0.0000	0.0600	0.0491	0.2212

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8530	6.6120	1.0768	497.5287	11.6855	201.9146	1.5652

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
73179.422	0.499	131.743	298414.688	0.248917E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =10.718 EfDer = 0.988 SH = 0.285430E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.857	2149.058	6.612	497.528	1.000	1.000	0.980

W Kg/sec = 14.480 Wdry = 31.766 WH2O = 0.091 lbm/sec H2O = 1.601g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.365	2194.306	1.378	0.251	53.441	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54711.438	24968.484	2.682	545.479	203.398	424.468	2.087

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	240.71	-0.08	240.71	0.22	0.41	384.31
MEAN	17.74	0.00	-0.02	240.71	-0.08	240.71	0.22	0.38	
HUB	15.05	0.00	-0.02	240.71	-0.08	240.71	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.41	46.36	11.05	376.39	446.85	6.39	492.91	483.40	31.52
MEAN	54.12	43.40	10.72	332.67	410.69	6.39	492.91	483.40	31.52
HUB	49.55	38.84	10.71	282.25	371.02	6.39	492.91	483.40	31.52

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	319.77	191.30	256.24	1089.08	0.29	2.26	1.98	8.75
MEAN	17.51	323.73	195.81	257.80	1087.68	0.30	2.34	2.07	6.78
HUB	14.85	347.78	231.50	259.54	1086.31	0.32	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	371.52	313.27	180.22	0.29	3791.32	0.92	0.90		
MEAN	328.32	289.86	132.51	0.27	3429.44	0.92	0.90	0.90	1.55
HUB	278.50	263.76	47.00	0.24	3439.06	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.12	1.08	6.71	508.86	1.02	500.71	490.22	25.62
MEAN	7.07	1.07	6.66	507.78	1.02	499.43	489.76	26.70
HUB	7.07	1.07	6.60	507.81	1.02	498.17	490.11	27.79

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.74	35.12	31.50	3.62	0.93	0.45	1.40
MEAN	37.22	27.20	23.50	3.70	0.94	0.44	1.62
HUB	41.73	10.26	6.50	3.76	0.94	0.45	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.988	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	350.3441	197.0956	289.6451	1086.4955	0.3225	-0.1315	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.0853	6.6002	498.3728	490.3721	27.8571	34.2342	31.5000	-2.7342

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	286.9757	62.6018	280.0644	1089.9929	0.2633	0.2295	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.0837	6.7556	501.5911	489.6571	451.3937	0.0135	0.3701

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	291.5813	0.0000	291.5813	1089.7507	0.2676	0.2771	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7346	501.3797	489.9785	0.0000	0.0600	0.0392	0.1811

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8718	7.0726	1.0697	508.1526	10.6247	211.2733	1.6378

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
66678.508	0.483	120.039	298691.219	0.318902E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.686 EfDer = 0.997 SH = 0.363707E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.857	2149.058	7.073	508.152	1.000	1.000	0.980

W Kg/sec = 14.480 Wdry = 31.741 WH2O = 0.116 lbm/sec H2O = 2.135g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.536	2171.246	1.377	0.251	53.466	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52277.766	24960.738	2.670	513.330	192.265	395.845	2.059

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	244.41	-0.08	244.41	0.22	0.40	364.92
MEAN	16.97	0.00	-0.02	244.41	-0.08	244.41	0.22	0.37	
HUB	14.32	0.00	-0.02	244.41	-0.08	244.41	0.22	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.92	46.36	9.56	361.20	436.19	6.83	503.40	490.54	28.46
MEAN	52.49	43.80	8.69	318.27	401.35	6.83	503.40	490.54	28.46
HUB	47.70	37.84	9.86	268.56	363.19	6.83	503.40	490.54	28.46

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	310.68	171.26	259.21	1099.12	0.28	2.16	1.89	8.34
MEAN	16.57	314.76	176.56	260.58	1097.91	0.29	2.24	1.97	6.35
HUB	13.89	337.69	212.94	262.09	1096.73	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	354.08	317.19	182.81	0.29	3235.07	0.92	0.91		
MEAN	310.83	293.14	134.27	0.27	2927.65	0.92	0.91	0.91	1.49
HUB	260.49	266.37	47.56	0.24	2958.93	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.53	1.06	7.13	517.80	1.02	510.13	496.13	24.20
MEAN	7.49	1.06	7.08	516.88	1.02	509.01	495.78	25.04
HUB	7.49	1.06	7.02	516.98	1.02	507.91	496.15	25.88

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.45	35.19	31.50	3.69	0.93	0.41	1.40
MEAN	34.12	27.26	23.50	3.76	0.93	0.40	1.62
HUB	39.09	10.28	6.50	3.78	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.997	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	336.4299	177.5493	285.7644	1097.0325	0.3067	-0.1061	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.4982	7.0323	508.2255	496.3105	25.8603	31.8532	32.4000	0.5468

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	288.7083	64.7488	281.3539	1099.5828	0.2626	0.1775	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4974     7.1522   510.5970   495.7749   432.2457     0.0121     0.3393

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   286.2980     0.0000   286.2980  1099.6910     0.2603     0.2479     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.1478   510.7081   496.0298     0.0000     0.0600     0.0367     0.1673

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8786     7.4869     1.0586   517.2210     9.0693   232.1106     1.7993

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57061.410       0.455     102.726  307651.938   0.403848E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.830   EfDer =  1.000    SH =  0.455890E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.857    2149.058       7.487     517.219       1.000       1.000       0.980
 W Kg/sec =  14.480  Wdry =  31.712  WH2O = 0.145  lbm/sec   H2O =   2.787g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.460    2152.128       1.375       0.252      53.496      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50192.527   24951.590       2.780     509.668     183.345     384.739       2.098

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   236.34    -0.08   236.34     0.21     0.38   344.06
 MEAN   15.91     0.00    -0.02   236.34    -0.08   236.34     0.21     0.35
 HUB    13.07     0.00    -0.02   236.34    -0.08   236.34     0.21     0.31

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    55.48    47.36     8.12   343.57   417.08     7.25   512.79   496.57    26.64
 MEAN   51.63    44.80     6.83   298.43   380.75     7.25   512.79   496.57    26.64
 HUB    46.05    38.84     7.21   245.12   340.56     7.25   512.79   496.57    26.64

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   296.64   157.97   251.08  1108.12     0.27     2.05     1.78     7.43
 MEAN   15.50   298.69   159.68   252.43  1106.87     0.27     2.13     1.86     5.75
 HUB    12.59   317.02   189.84   253.89  1105.65     0.29     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   336.45   308.05   178.48     0.28  2835.41     0.92     0.91
 MEAN  290.64   284.38   130.97     0.26  2475.91     0.92     0.91     0.91     1.47
 HUB   236.11   258.07    46.27     0.23  2391.19     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     7.90     1.06     7.53   525.65     1.02   518.67   501.24    23.13
 MEAN    7.85     1.05     7.47   524.58     1.01   517.50   500.82    23.93
 HUB     7.84     1.05     7.41   524.33     1.01   516.36   500.97    24.75

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    32.18    35.41    31.50     3.91     0.93     0.40     1.40
 MEAN   32.32    27.42    23.50     3.92     0.93     0.38     1.64
 HUB    36.79    10.33     6.50     3.83     0.93     0.38     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495     73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   330.1043   162.6052   287.2775  1105.4581     0.2986    -0.1940     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.8559     7.3924   516.2102   501.4317    24.9920    29.5108    33.0000     3.4892
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   295.2436    67.4191   287.4430  1107.2977     0.2666     0.0312     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.8535     7.4808   517.9339   500.9949   410.5396     0.0261     0.3082

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   287.1825     0.0000   287.1825  1107.6708     0.2593     0.2222     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.4954   518.2902   501.0649     0.0000     0.0600     0.0408     0.0682

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8787     7.8477     1.0482   524.8257     7.6318   258.3218     2.0025

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  48150.539       0.425      86.684  324505.875   0.488293E-02

Melt Ratio at Stator LE, Throat, TE
0.25349E+00 0.30413E+00 0.46275E+00
 trTOT =     1.1141   Tt4 =   524.8257   T1  =   471.0738

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    337256.84    607.1528     79.8032      1.4033      0.8522     14.1777      1.1141     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 10% 25666 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.356   EfDer =  0.994    SH =  0.120018E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     40.134    1970.532       6.513     481.867       1.000       1.000       0.980
  W Kg/sec =  18.243  Wdry =  40.086  WH2O = 0.048  lbm/sec   H2O =   0.691g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     87.310    2044.452       1.380       0.249      53.387      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  67152.094   31476.273       3.251     831.557     255.761     619.754       2.423

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   193.81    -0.07   193.81     0.18     0.38   368.05
 MEAN    17.06     0.00    -0.02   193.81    -0.07   193.81     0.18     0.33
 HUB     12.51     0.00    -0.02   193.81    -0.07   193.81     0.18     0.27

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     61.36    50.47    10.89   354.76   404.30      6.37   478.86   470.56    23.65
 MEAN    56.56    47.20     9.36   293.37   351.66      6.37   478.86   470.56    23.65
 HUB     47.99    38.62     9.37   215.12   289.60      6.37   478.86   470.56    23.65

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   339.58   212.30   265.04  1071.81      0.32     7.29     6.52    16.04
 MEAN    18.04   352.09   229.66   266.88  1070.32      0.33     7.43     6.80    12.53
 HUB     15.00   392.61   285.09   269.95  1068.05      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    354.76   300.90   142.46     0.28  4381.06      0.92     0.91
 MEAN   310.15   278.75    80.49     0.26  4143.35      0.92     0.91     0.91     1.43
 HUB    257.94   271.31    27.15     0.25  4277.17      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.07     1.09     6.60   493.94     1.03   484.70   479.74    24.58
 MEAN     7.04     1.08     6.54   493.28     1.02   483.35   479.51    25.76
 HUB      7.05     1.08     6.43   493.65     1.02   481.30   480.18    27.65

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.69    28.26    24.20     4.06     0.93     0.40     1.80
 MEAN    40.71    16.78    12.70     4.08     0.93     0.36     2.22
 HUB     46.56    -5.74    -9.30     3.56     0.93     0.24     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.994       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   366.8771   229.2169   286.4584  1069.7042     0.3430    -0.0590     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     7.0483     6.5049   482.8518   480.0273    27.0384    38.6659    35.4000    -3.2659

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   289.2946    70.7703   280.5048  1074.1967     0.2693     0.3410     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     7.0458     6.7043   486.9272   479.4550   554.9116     0.0148     0.4405

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   287.2021     0.0000   287.2021  1074.2843     0.2673     0.3522     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     6.6963   487.0251   479.9786     0.0000     0.0600     0.0403     0.3260
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8734     7.0323     1.0798   493.6248    11.7590   199.5773     1.5471

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  73463.859       0.584     166.617  405263.000   0.182870E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.525   EfDer =  0.999    SH =  0.245864E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     40.134    1970.532       7.032     493.624       1.000       1.000       0.980
 W Kg/sec =  18.243  Wdry =  40.035  WH2O = 0.099  lbm/sec   H2O =   1.471g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     81.841    2019.962       1.378       0.250      53.428      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64601.434   31460.652       2.461     590.487     239.920     468.502       1.953

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   262.56    -0.09   262.56     0.24     0.41   362.23
 MEAN    18.08     0.00    -0.02   262.56    -0.09   262.56     0.24     0.38
 HUB     15.21     0.00    -0.02   262.56    -0.09   262.56     0.24     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.40     46.36     7.04   353.38   440.32     6.75   488.12   481.64    34.83
 MEAN    49.82     42.30     7.52   310.88   406.98     6.75   488.12   481.64    34.83
 HUB     44.90     37.84     7.06   261.55   370.67     6.75   488.12   481.64    34.83

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   321.46   152.88   282.78  1081.76      0.30     2.33     2.04     9.02
 MEAN    18.01   328.01   164.28   283.90  1080.90      0.30     2.40     2.13     7.35
 HUB     15.22   354.54   210.64   285.19  1080.06      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    351.15   345.36   198.27     0.32  3123.63      0.92     0.91
 MEAN   309.70   318.98   145.42     0.30  2960.32      0.92     0.91     0.91     1.38
 HUB    261.78   289.74    51.14     0.27  3207.92      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.45     1.06     7.01   502.20     1.02   493.95   487.11    29.88
 MEAN     7.43     1.06     6.97   501.75     1.02   493.16   486.96    30.66
 HUB      7.46     1.06     6.93   502.43     1.02   492.40   487.67    31.43

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.40    35.04    31.50     3.54     0.93     0.34     1.40
 MEAN    30.06    27.12    23.50     3.62     0.93     0.34     1.63
 HUB     36.45    10.17     6.50     3.67     0.93     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   359.9755   164.7415   320.0666  1079.3601     0.3335    -0.1624     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.4396     6.8963   491.7876   487.6586    32.3412    27.2353    30.6000     3.3647

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   314.2495    66.6231   307.1060  1082.0542     0.2904     0.1037     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4375     7.0208   494.2476   487.1118   491.5697     0.0145     0.2601

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   325.4207     0.0000   325.4207  1081.4207     0.3009     0.1538     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9798	493.6784	487.4713	0.0000	0.0600	0.0405	0.0169

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8721	7.4252	1.0559	502.1259	8.5019	249.0451	1.9306

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
53287.559	0.432	120.857	373711.438	0.270516E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.622 EfDer = 0.996 SH = 0.301512E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
40.134	1970.532	7.425	502.125	1.000	1.000	0.980

W Kg/sec = 18.243 Wdry = 40.013 WH2O = 0.121 lbm/sec H2O = 1.868g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.175	2002.790	1.377	0.251	53.446	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62396.902	31453.723	2.379	545.479	229.259	424.468	1.851

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	274.53	-0.09	274.53	0.25	0.41	350.77
MEAN	17.74	0.00	-0.02	274.53	-0.09	274.53	0.25	0.38	
HUB	15.05	0.00	-0.02	274.53	-0.09	274.53	0.25	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.51	46.36	5.15	345.13	441.07	7.11	496.12	487.70	32.57
MEAN	48.02	43.40	4.62	305.03	410.45	7.11	496.12	487.70	32.57
HUB	43.32	38.84	4.48	258.80	377.35	7.11	496.12	487.70	32.57

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	324.01	131.75	296.02	1089.25	0.30	2.26	1.98	8.75
MEAN	17.51	331.50	147.82	296.71	1088.76	0.30	2.34	2.07	6.78
HUB	14.85	359.04	200.85	297.60	1088.29	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	340.66	362.30	208.90	0.33	2611.95	0.92	0.91		
MEAN	301.05	333.94	153.22	0.31	2589.53	0.92	0.91	0.91	1.32
HUB	255.36	302.55	54.51	0.28	2984.09	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.78	1.05	7.33	509.28	1.01	500.92	492.16	29.02
MEAN	7.78	1.05	7.30	509.22	1.01	500.47	492.23	29.44
HUB	7.84	1.06	7.27	510.30	1.02	500.03	493.15	29.83

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	23.99	35.21	31.50	3.71	0.93	0.28	1.40
MEAN	26.48	27.31	23.50	3.81	0.92	0.30	1.62
HUB	34.02	10.38	6.50	3.88	0.92	0.33	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.996	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	365.8132	148.7919	334.1860	1087.0767	0.3365	-0.1751	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.7945	7.2157	498.9445	493.0005	31.1323	24.0004	31.5000	7.4996

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	333.7638	72.8083	325.7257	1089.0181	0.3065	0.0087	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.7895	7.3058	500.7307	492.5793	451.3937	0.0199	0.2182

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	339.5275	0.0000	339.5275	1088.6744	0.3119	0.0989	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.2729	500.4226	492.8669	0.0000	0.0600	0.0552	-0.0573

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8446	7.7720	1.0467	509.6017	7.4764	269.1685	2.0866

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
46944.480	0.405	106.470	376437.906	0.328984E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 2.047 EfDer = 0.977 SH = 0.363597E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
40.134	1970.532	7.772	509.601	1.000	1.000	0.980

W Kg/sec = 18.243 Wdry = 39.988 WH2O = 0.146 lbm/sec H2O = 2.318g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
75.241	1988.045	1.377	0.251	53.466	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60621.375	31445.980	2.325	513.330	220.741	395.845	1.793

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	283.42	-0.10	283.42	0.26	0.40	334.13
MEAN	16.97	0.00	-0.02	283.42	-0.10	283.42	0.26	0.37	
HUB	14.32	0.00	-0.02	283.42	-0.10	283.42	0.26	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.45	46.36	3.09	331.20	435.98	7.42	503.21	492.98	31.13
MEAN	45.85	43.80	2.05	291.83	406.88	7.42	503.21	492.98	31.13
HUB	41.00	37.84	3.16	246.25	375.52	7.42	503.21	492.98	31.13

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	323.58	108.44	304.87	1095.60	0.30	2.16	1.89	8.34
MEAN	16.57	330.44	126.53	305.26	1095.36	0.30	2.24	1.97	6.35
HUB	13.89	356.09	182.33	305.86	1095.13	0.33	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	324.66	373.76	216.23	0.34	2049.18	0.92	0.89		
MEAN	285.01	343.94	158.47	0.31	2098.79	0.92	0.89	0.89	1.27
HUB	238.85	311.04	56.52	0.28	2534.00	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.05	1.04	7.59	515.21	1.01	506.88	496.45	28.77
MEAN	8.06	1.04	7.58	515.34	1.01	506.66	496.61	28.96
HUB	8.12	1.05	7.56	516.53	1.01	506.45	497.54	29.12

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	19.58	35.35	31.50	3.85	0.93	0.23	1.40
MEAN	22.51	27.44	23.50	3.94	0.91	0.25	1.62
HUB	30.80	10.47	6.50	3.97	0.91	0.30	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.977	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	358.8514	127.2442	335.5342	1094.0339	0.3280	-0.1430	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0747	7.5040	505.4571	497.2836	30.2663	20.7682	32.4000	11.6318

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	341.8393	76.6646	333.1316	1095.0566	0.3122	-0.0539	2.2705

```
   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.0659     7.5473   506.4053   497.0674   432.2457     0.0275     0.1816

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   339.5653     0.0000   339.5653  1095.1842     0.3101     0.0455     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.5299   506.5293   497.2161     0.0000     0.0600     0.0784    -0.0882

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.7796     8.0402     1.0345   515.6925     6.0913   308.9255     2.3948

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  38322.410       0.364      86.916  390083.500   0.393754E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-0.340   EfDer =  0.945    SH =  0.432573E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     40.134    1970.532       8.040     515.692       1.000       1.000       0.980
 W Kg/sec =  18.243  Wdry =  39.960  WH2O = 0.174  lbm/sec   H2O =   2.823g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.165    1976.270       1.376       0.252      53.489      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59239.266   31437.361       2.373     509.668     214.740     384.739       1.792

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   278.95    -0.10   278.95     0.25     0.38   315.94
 MEAN    15.91     0.00    -0.02   278.95    -0.10   278.95     0.25     0.36
 HUB     13.07     0.00    -0.02   278.95    -0.10   278.95     0.25     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     48.49    47.36     1.13   315.03   420.85     7.69   509.52   497.25    30.25
 MEAN    44.46    44.80    -0.34   273.64   390.82     7.69   509.52   497.25    30.25
 HUB     38.87    38.84     0.03   224.75   358.28     7.69   509.52   497.25    30.25

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   314.83    93.12   300.74  1101.42      0.29     2.05     1.78     7.43
 MEAN    15.50   320.16   108.79   301.11  1101.17      0.29     2.13     1.86     5.75
 HUB     12.59   341.67   160.32   301.72  1100.93      0.31     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    308.50   369.91   215.38     0.34  1672.38      0.92     0.86
 MEAN   266.50   339.91   157.71     0.31  1687.57      0.92     0.86     0.86     1.24
 HUB    216.50   306.90    56.18     0.28  2019.72      0.92     0.86

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.27     1.03     7.82   520.25     1.01   512.39   500.04    28.51
 MEAN     8.27     1.03     7.81   520.29     1.01   512.16   500.14    28.71
 HUB      8.32     1.03     7.79   521.20     1.01   511.94   500.86    28.87

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     17.20    35.61    31.50     4.11     0.93     0.20     1.40
 MEAN    19.87    27.64    23.50     4.14     0.90     0.21     1.64
 HUB     27.98    10.55     6.50     4.05     0.90     0.25     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.945       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   361.3436   110.7889   343.9404  1099.0638     0.3288    -0.2470     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.2746     7.6874   510.2247   500.9914    30.5644    17.8546    33.0000    15.1454
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   357.1410    81.5535   347.7049  1099.3193     0.3249    -0.2636     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.2498     7.6774   510.4634   500.9259   410.5396     0.0716     0.1494

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   347.4427     0.0000   347.4427  1099.8933     0.3159     0.0113     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.6941   511.0008   500.9147     0.0000     0.0600     0.1016    -0.2289

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6939     8.2354     1.0243   520.5743     4.8914   359.4349     2.7863

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  30837.957       0.324      69.941  413430.375   0.460042E-02

Melt Ratio at Stator LE, Throat, TE
0.12660E+00 0.14421E+00 0.20672E+00
 trTOT =     1.0803   Tt4 =   520.5743   T1  =   481.8665

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    242856.27    550.8001     87.3096      1.2645      0.8262      9.3556      1.0803     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 20047 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.755   EfDer =  0.999    SH =  0.169853E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     49.544    1803.324       7.939     496.981       1.000       1.000       0.980
 W Kg/sec =  22.520  Wdry =  49.460  WH2O = 0.084  lbm/sec   H2O =   1.154g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     89.793    1842.304       1.379       0.250      53.403      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  70228.852   38848.563       3.160     831.557     263.127     619.754       2.355

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   202.69    -0.07   202.69     0.19     0.35   331.66
 MEAN    17.06     0.00    -0.02   202.69    -0.07   202.69     0.19     0.31
 HUB     12.51     0.00    -0.02   202.69    -0.07   202.69     0.19     0.26

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.03    50.47     7.56   324.65   382.79     7.75   493.70   482.11    22.04
 MEAN    52.96    47.20     5.76   268.47   336.45     7.75   493.70   482.11    22.04
 HUB     44.18    38.62     5.56   196.87   282.61     7.75   493.70   482.11    22.04

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.64   173.93   280.02  1085.54      0.30     7.29     6.52    16.04
 MEAN    18.04   344.37   198.77   281.21  1084.67      0.32     7.43     6.80    12.53
 HUB     15.00   387.81   264.34   283.76  1082.93      0.36     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    324.65   318.00   150.72     0.29  3589.69      0.92     0.91
 MEAN   283.83   293.79    85.06     0.27  3586.20      0.92     0.91     0.91     1.28
 HUB    236.05   285.17    28.28     0.26  3965.91      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.43     1.06     7.91   506.02     1.02   497.33   489.19    24.23
 MEAN     8.43     1.06     7.87   506.01     1.02   496.52   489.35    24.86
 HUB      8.48     1.07     7.77   506.97     1.02   494.94   490.38    26.16

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.85    28.29    24.20     4.09     0.93     0.30     1.80
 MEAN    35.25    16.83    12.70     4.13     0.92     0.26     2.22
 HUB     42.97    -5.69    -9.30     3.61     0.92     0.16     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   361.3418   198.3833   302.0132  1083.9147     0.3334    -0.0731     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     8.4412     7.8250   495.9005   489.9069    26.1308    33.2997    35.4000     2.1003

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   307.0393    75.1112   297.7103  1087.0670     0.2824     0.2332     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     8.4391     7.9909   498.8011   489.4860   554.9116     0.0136     0.3529

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   304.7411     0.0000   304.7411  1087.1741     0.2803     0.2574     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     7.9836   498.9149   490.0158     0.0000     0.0600     0.0381     0.2211
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8726     8.4245     1.0611   506.3303     9.3494   221.5003     1.7171

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  58525.770       0.555     163.858  489423.188   0.244646E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.326   EfDer =  0.988    SH =  0.317409E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.544    1803.324       8.425     506.330       1.000       1.000       0.980
 W Kg/sec =  22.520  Wdry =  49.387  WH2O = 0.157  lbm/sec   H2O =   2.211g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     85.412    1825.219       1.377       0.251      53.451      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68509.297   38825.906       2.357     590.487     250.504     468.502       1.870

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   278.44    -0.10   278.44     0.26     0.39   327.31
 MEAN    18.08     0.00    -0.02   278.44    -0.10   278.44     0.26     0.37
 HUB     15.21     0.00    -0.02   278.44    -0.10   278.44     0.26     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.28    46.36     2.92   323.39   426.82     8.06   500.16   491.70    33.18
 MEAN    45.63    42.30     3.33   284.50   398.15     8.06   500.16   491.70    33.18
 HUB     40.70    37.84     2.86   239.36   367.24     8.06   500.16   491.70    33.18

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   322.03   107.92   303.40  1092.11      0.29     2.33     2.04     9.02
 MEAN    18.01   329.27   127.22   303.70  1091.94      0.30     2.40     2.13     7.35
 HUB     15.22   355.71   184.35   304.21  1091.78      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    321.35   370.95   213.43     0.34  2205.75      0.92     0.90
 MEAN   283.42   341.52   156.21     0.31  2292.90      0.92     0.90      0.90     1.25
 HUB    239.56   309.18    55.21     0.28  2807.82      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.73     1.04     8.23   511.86     1.01   503.60   495.30    30.89
 MEAN     8.74     1.04     8.22   512.08     1.01   503.44   495.50    31.03
 HUB      8.82     1.05     8.20   513.37     1.01   503.29   496.51    31.15

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     19.58    35.12    31.50     3.62     0.93     0.22     1.40
 MEAN    22.73    27.22    23.50     3.72     0.92     0.24     1.63
 HUB     31.22    10.29     6.50     3.79     0.92     0.29     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.988       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   365.8259   127.5736   342.8608  1090.1106     0.3356    -0.1929     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.7592     8.1123   501.7816   496.3091    32.9303    20.4095    30.6000    10.1905

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   338.5861    71.7827   330.8894  1091.7673     0.3101    -0.0385     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.7510     8.1951   503.3093   495.9384   491.5697     0.0250     0.1650

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   351.2381     0.0000   351.2381  1091.0072     0.3219     0.0292     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1311	502.6158	496.3303	0.0000	0.0600	0.0696	-0.1551

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8035	8.7265	1.0358	512.4332	6.1035	300.3931	2.3286

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
38347.086	0.371	107.363	454118.906	0.344813E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =-0.040 EfDer = 0.949 SH = 0.378004E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.544	1803.324	8.727	512.433	1.000	1.000	0.980

W Kg/sec = 22.520 Wdry = 49.357 WH2O = 0.187 lbm/sec H2O = 2.684g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
82.952	1814.317	1.376	0.251	53.471	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
67212.094	38816.574	2.241	545.479	243.387	424.468	1.744

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	295.71	-0.10	295.71	0.27	0.40	317.76
MEAN	17.74	0.00	-0.02	295.71	-0.10	295.71	0.27	0.37	
HUB	15.05	0.00	-0.02	295.71	-0.10	295.71	0.27	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	46.89	46.36	0.53	315.84	432.74	8.30	505.48	496.36	33.20
MEAN	43.36	43.40	-0.04	279.15	406.73	8.30	505.48	496.36	33.20
HUB	38.70	38.84	-0.14	236.84	378.93	8.30	505.48	496.36	33.20

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	333.51	82.79	323.07	1096.44	0.30	2.26	1.98	8.75
MEAN	17.51	340.36	107.82	322.83	1096.71	0.31	2.34	2.07	6.78
HUB	14.85	366.63	173.61	322.92	1096.98	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	311.75	395.98	228.96	0.36	1642.02	0.92	0.87		
MEAN	275.50	363.78	167.68	0.33	1889.39	0.92	0.87	0.87	1.19
HUB	233.69	328.46	60.08	0.30	2579.66	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.95	1.03	8.40	516.54	1.01	507.70	499.13	32.00
MEAN	8.98	1.03	8.41	517.16	1.01	507.95	499.51	31.74
HUB	9.08	1.04	8.42	518.89	1.01	508.20	500.72	31.45

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	14.37	35.33	31.50	3.83	0.93	0.15	1.40
MEAN	18.47	27.45	23.50	3.95	0.90	0.19	1.62
HUB	28.26	10.54	6.50	4.04	0.90	0.25	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.949	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	380.1600	108.5289	364.3392	1094.6271	0.3473	-0.2072	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.9995	8.2904	506.0463	500.4437	33.8491	16.5877	31.5000	14.9123

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	366.1744	79.8785	357.3558	1095.5232	0.3342	-0.1439	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.9833	8.3252	506.8761	500.2269	451.3937	0.0372	0.1204

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   373.4313     0.0000   373.4313  1095.0568     0.3410    -0.0356     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2652   506.4501   500.5120     0.0000     0.0600     0.1000    -0.2449

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6851     8.9460     1.0251   517.5267     5.0952   340.2122     2.6373

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  32072.021       0.330      89.794  459914.469   0.405663E-02

Melt Ratio at Stator LE, Throat, TE
0.16151E-01 0.17292E-01 0.26269E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =-3.111   EfDer =  0.892    SH =  0.435799E-02

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     49.544    1803.324       8.946     517.525       1.000       1.000       0.980
 W Kg/sec =  22.520  Wdry =  49.328  WH2O = 0.216  lbm/sec   H2O =   3.129g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     81.318    1805.367       1.376       0.252      53.490      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66464.922   38807.652       2.151     513.330     238.680     395.845       1.658

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   310.74    -0.11   310.74     0.28     0.40   303.43
 MEAN    16.97     0.00    -0.02   310.74    -0.11   310.74     0.28     0.37
 HUB     14.32     0.00    -0.02   310.74    -0.11   310.74     0.28     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     44.30    46.36    -2.06   303.09   434.15     8.47   509.86   500.18    33.13
 MEAN    40.69    43.80    -3.11   267.07   409.81     8.47   509.86   500.18    33.13
 HUB     35.96    37.84    -1.88   225.35   383.92     8.47   509.86   500.18    33.13

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   343.37    55.62   338.83  1099.68     0.31     2.16     1.89     8.34
 MEAN    16.57   348.50    84.14   338.19  1100.30     0.32     2.24     1.97     6.35
 HUB     13.89   371.94   155.16   338.03  1100.90     0.34     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    297.11   416.09   241.49     0.38  1052.17     0.92     0.82
 MEAN   260.82   381.56   176.69     0.35  1396.28     0.92     0.82     0.82     1.14
 HUB    218.59   343.93    63.42     0.31  2156.77     0.92     0.82

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.08     1.02     8.50   520.15     1.01   510.79   502.08    32.85
 MEAN     9.13     1.02     8.52   521.01     1.01   511.37   502.53    32.25
 HUB      9.23     1.03     8.54   522.91     1.01   511.93   503.75    31.64

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      9.32    35.48    31.50     3.98     0.93     0.09     1.40
 MEAN    13.97    27.58    23.50     4.08     0.89     0.13     1.62
 HUB     24.66    10.63     6.50     4.13     0.89     0.21     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.892       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   382.0425    84.6097   372.5556  1098.5599     0.3478    -0.1702     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.1392     8.4176   509.7738   503.3492    33.9480    12.7952    32.4000    19.6048

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   382.0393    85.6803   372.3076  1098.5577     0.3478    -0.1992     2.2705
```

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.1153	8.3953	509.7721	503.3513	432.2457	0.0482	0.0841

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	380.4358	0.0000	380.4358	1098.6517	0.3463	-0.0871	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.3547	509.8616	503.3715	0.0000	0.0600	0.1293	-0.2641

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.4886	9.0646	1.0133	521.3394	3.8286	418.6752	3.2455

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
24139.064	0.273	67.584	479193.344	0.456085E-02

Melt Ratio at Stator LE, Throat, TE
0.25610E+00 0.28268E+00 0.36453E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-5.963 EfDer = 0.829 SH = 0.478536E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.544	1803.324	9.065	521.334	1.000	1.000	0.980

W Kg/sec = 22.520 Wdry = 49.307 WH2O = 0.237 lbm/sec H2O = 3.455g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
80.549	1798.753	1.375	0.252	53.504	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
66083.703	38801.051	2.155	509.668	236.486	384.739	1.627

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	311.18	-0.11	311.18	0.28	0.38	287.56
MEAN	15.91	0.00	-0.02	311.18	-0.11	311.18	0.28	0.36	
HUB	13.07	0.00	-0.02	311.18	-0.11	311.18	0.28	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	42.83	47.36	-4.53	288.30	424.28	8.59	513.66	502.65	32.05
MEAN	38.84	44.80	-5.96	250.42	399.50	8.59	513.66	502.65	32.05
HUB	33.48	38.84	-5.36	205.68	373.07	8.59	513.66	502.65	32.05

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	341.95	37.59	339.87	1102.78	0.31	2.05	1.78	7.43
MEAN	15.50	345.39	64.99	339.22	1103.47	0.31	2.13	1.86	5.75
HUB	12.59	364.58	133.87	339.11	1104.12	0.33	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	282.32	418.82	244.73	0.38	676.38	0.92	0.76		
MEAN	243.89	383.50	178.90	0.35	1008.89	0.92	0.76	0.76	1.11
HUB	198.13	345.14	64.26	0.31	1686.85	0.92	0.76		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.15	1.01	8.57	523.01	1.00	513.75	504.02	32.37
MEAN	9.19	1.01	8.59	523.84	1.00	514.39	504.42	31.72
HUB	9.27	1.02	8.61	525.53	1.01	515.00	505.45	31.07

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	6.31	35.76	31.50	4.26	0.93	0.04	1.40
MEAN	10.85	27.81	23.50	4.31	0.87	0.09	1.64
HUB	21.54	10.73	6.50	4.23	0.87	0.16	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.829	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	394.5000	66.1812	388.9091	1100.6702	0.3584	-0.2824	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1883	8.4204	511.7955	505.5193	34.2999	9.6576	33.0000	23.3424

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   407.3193    93.0117   396.5575  1099.7925     0.3704    -0.4383     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1327     8.3202   510.9776   505.7370   410.5396     0.1108     0.0567

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   396.0731     0.0000   396.0731  1100.5503     0.3599    -0.0984     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.3448   511.6821   505.5550     0.0000     0.0600     0.1442    -0.3981

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.2692     9.1123     1.0053   524.1083     2.7950   528.1127     4.0939

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  17643.760       0.221      49.398  510167.125   0.494053E-02

Melt Ratio at Stator LE, Throat, TE
0.67036E+00 0.70109E+00 0.78808E+00
 trTOT =     1.0546   Tt4 =   524.1083   T1  =   496.9814

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    170727.72    477.9974     89.7930      1.1478      0.7034      5.7554      1.0546     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 15435 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 7.073   EfDer =  1.000    SH =  0.245223E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     47.846    1587.053       9.337     510.164       1.000       1.000       0.980
  W Kg/sec =  21.748  Wdry =  47.729  WH2O = 0.117  lbm/sec   H2O =   1.919g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     74.704    1600.275       1.378       0.250      53.428      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58898.695   37506.266       3.797     831.557     219.020     619.754       2.830

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   169.99    -0.06   169.99     0.15     0.30   288.09
 MEAN    17.06     0.00    -0.02   169.99    -0.06   169.99     0.15     0.27
 HUB     12.51     0.00    -0.02   169.99    -0.06   169.99     0.15     0.22

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     59.25    50.47     8.78   285.72   332.51     9.18   507.86   492.10    21.78
 MEAN    54.27    47.20     7.07   236.28   291.12     9.18   507.86   492.10    21.78
 HUB     45.56    38.62     6.94   173.26   242.77     9.18   507.86   492.10    21.78

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   284.14   159.31   235.28  1100.18      0.26     7.29     6.52    16.04
 MEAN    18.04   296.04   178.58   236.11  1099.43      0.27     7.43     6.80    12.53
 HUB     15.00   331.86   231.57   237.71  1098.10      0.30     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    285.72   267.09   126.41     0.24  3287.70      0.92     0.91
 MEAN   249.79   246.61    71.21     0.22  3221.89      0.92     0.91     0.91     1.33
 HUB    207.74   238.90    23.82     0.22  3474.26      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.79     1.05     9.35   517.43     1.01   510.99   498.12    24.62
 MEAN     9.78     1.05     9.31   517.28     1.01   510.29   498.17    25.14
 HUB      9.81     1.05     9.22   517.84     1.02   509.06   498.87    26.08

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.10    28.25    24.20     4.05     0.93     0.33     1.80
 MEAN    37.10    16.78    12.70     4.08     0.93     0.29     2.22
 HUB     44.25    -5.72    -9.30     3.58     0.93     0.19     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       1.000       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   309.6745   178.2341   253.2408  1098.8798     0.2818    -0.0679     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     9.7888     9.2716   509.8752   498.6780    26.2407    35.1384    35.4000     0.2616

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   258.2882    63.1852   250.4405  1101.3585     0.2345     0.2655     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     9.7882     9.4255   512.1942   498.3391   554.9116     0.0111     0.3783

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   256.2574     0.0000   256.2574  1101.3970     0.2327     0.2861     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.4196   512.2477   498.8725     0.0000     0.0600     0.0366     0.2535
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8815     9.7754     1.0469   517.4745     7.3530   213.2685     1.6532

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  46170.113       0.566     124.836  461131.063   0.348744E-02

Melt Ratio at Stator LE, Throat, TE
0.13401E+00 0.21349E+00 0.51755E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 4.569   EfDer =  0.995    SH =  0.420435E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
    47.846    1587.053       9.775     517.456       1.000       1.000       0.980
W Kg/sec =  21.748  Wdry =  47.645  WH2O = 0.201  lbm/sec   H2O =   3.356g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    71.865    1588.931       1.376       0.252      53.485      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 57730.176   37480.219       2.800     590.487     210.908     468.502       2.221

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
TIP     20.55     0.00    -0.02   234.63    -0.08   234.63     0.21     0.33   284.94
MEAN    18.08     0.00    -0.02   234.63    -0.08   234.63     0.21     0.31
HUB     15.21     0.00    -0.02   234.63    -0.08   234.63     0.21     0.29

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
TIP     50.51    46.36     4.15   284.61   368.92     9.48   513.09   500.30    31.74
MEAN    46.87    42.30     4.57   250.38   343.19     9.48   513.09   500.30    31.74
HUB     41.93    37.84     4.09   210.65   315.37     9.48   513.09   500.30    31.74

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
TIP     20.42   276.12   102.93   256.22  1105.28     0.25     2.33     2.04     9.02
MEAN    18.01   282.28   117.78   256.53  1105.04     0.26     2.40     2.13     7.35
HUB     15.22   305.10   164.51   256.96  1104.80     0.28     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
TIP    282.81   313.05   179.88     0.28  2103.52     0.92     0.91
MEAN   249.43   288.33   131.65     0.26  2122.76     0.92     0.91     0.91     1.28
HUB    210.83   261.10    46.33     0.24  2505.51     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
TIP     10.07     1.03     9.65   522.07     1.01   516.02   503.13    29.71
MEAN    10.07     1.03     9.63   522.11     1.01   515.79   503.22    29.91
HUB     10.13     1.04     9.61   522.95     1.01   515.56   503.91    30.09

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
TIP     21.89    35.07    31.50     3.57     0.93     0.25     1.40
MEAN    24.66    27.17    23.50     3.67     0.92     0.27     1.63
HUB     32.63    10.22     6.50     3.72     0.92     0.30     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.995       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   311.9026   118.1153   288.6729  1103.7985     0.2826    -0.1811     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
  10.0843     9.5493   514.6487   503.7908    31.0624    22.2527    30.6000     8.3473

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   285.3728    60.5011   278.8857  1105.1425     0.2582     0.0001     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500    10.0807     9.6309   515.9049   503.5178   491.5697     0.0180     0.1888

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   295.3691     0.0000   295.3691  1104.6409     0.2674     0.0612     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.5820	515.4451	503.9475	0.0000	0.0600	0.0594	-0.1066

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8336	10.0617	1.0293	522.3655	4.9195	284.6049	2.2062

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
31006.822	0.388	83.837	427455.594	0.451050E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 1.117 EfDer = 0.966 SH = 0.504098E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
47.846	1587.053	10.062	522.365	1.000	1.000	0.980

W Kg/sec = 21.748 Wdry = 47.605 WH2O = 0.241 lbm/sec H2O = 4.089g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.149	1581.475	1.375	0.252	53.512	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56808.297	37467.727	2.648	545.479	205.984	424.468	2.061

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	249.93	-0.09	249.93	0.23	0.34	276.98
MEAN	17.74	0.00	-0.02	249.93	-0.09	249.93	0.23	0.32	
HUB	15.05	0.00	-0.02	249.93	-0.09	249.93	0.23	0.29	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	48.05	46.36	1.69	277.96	373.87	9.72	517.42	504.51	33.34
MEAN	44.52	43.40	1.12	245.67	350.52	9.72	517.42	504.51	33.34
HUB	39.84	38.84	1.00	208.44	325.50	9.72	517.42	504.51	33.34

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	284.88	81.09	273.10	1108.83	0.26	2.26	1.98	8.75
MEAN	17.51	291.13	100.92	273.08	1108.90	0.26	2.34	2.07	6.78
HUB	14.85	314.22	155.15	273.24	1108.98	0.28	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	274.36	334.57	193.27	0.30	1608.20	0.92	0.88		
MEAN	242.46	307.58	141.54	0.28	1768.28	0.92	0.88	0.88	1.22
HUB	205.67	277.87	50.52	0.25	2305.27	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.28	1.02	9.83	525.89	1.01	519.47	506.98	32.68
MEAN	10.31	1.02	9.83	526.24	1.01	519.53	507.22	32.61
HUB	10.38	1.03	9.83	527.42	1.01	519.60	508.08	32.51

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	16.54	35.29	31.50	3.79	0.93	0.18	1.40
MEAN	20.28	27.40	23.50	3.90	0.91	0.21	1.62
HUB	29.59	10.47	6.50	3.97	0.91	0.27	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.966	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	323.4599	101.5817	307.0952	1107.4856	0.2921	-0.1954	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3186	9.7356	518.2404	507.9443	34.1216	18.3033	31.5000	13.1967

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	308.5057	67.2984	301.0759	1108.2802	0.2784	-0.1034	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.3098	9.7790	518.9890	507.7847	451.3937	0.0277	0.1423

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	313.9640	0.0000	313.9640	1107.9855	0.2834	-0.0062	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.7320	518.7213	508.1333	0.0000	0.0600	0.0885	-0.1986

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7367	10.2798	1.0217	526.5173	4.1526	319.8939	2.4798

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
26249.061	0.349	70.973	433412.281	0.549576E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =-1.984 EfDer = 0.915 SH = 0.604830E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
47.846	1587.053	10.280	526.516	1.000	1.000	0.980

W Kg/sec = 21.748 Wdry = 47.557 WH2O = 0.289 lbm/sec H2O = 4.958g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.933	1575.227	1.373	0.253	53.544	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56218.652	37452.648	2.534	513.330	202.538	395.845	1.954

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	262.83	-0.09	262.83	0.24	0.34	264.75
MEAN	16.97	0.00	-0.02	262.83	-0.09	262.83	0.24	0.32	
HUB	14.32	0.00	-0.02	262.83	-0.09	262.83	0.24	0.30	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	45.43	46.36	-0.93	266.74	374.54	9.89	521.06	508.48	35.76
MEAN	41.82	43.80	-1.98	235.04	352.65	9.89	521.06	508.48	35.76
HUB	37.05	37.84	-0.79	198.33	329.32	9.89	521.06	508.48	35.76

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	291.92	57.76	286.15	1111.56	0.26	2.16	1.89	8.34
MEAN	16.57	296.98	80.39	285.89	1111.87	0.27	2.24	1.97	6.35
HUB	13.89	317.83	138.88	285.88	1112.18	0.29	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	261.48	351.26	203.73	0.32	1092.17	0.92	0.84		
MEAN	229.54	322.46	149.15	0.29	1333.99	0.92	0.84	0.84	1.16
HUB	192.37	290.84	53.49	0.26	1930.35	0.92	0.84		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.42	1.01	9.94	528.90	1.00	522.18	510.35	35.84
MEAN	10.46	1.02	9.96	529.43	1.01	522.47	510.65	35.52
HUB	10.54	1.02	9.97	530.74	1.01	522.76	511.53	35.18

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	11.41	35.45	31.50	3.95	0.93	0.12	1.40
MEAN	15.71	27.55	23.50	4.05	0.89	0.16	1.62
HUB	25.91	10.60	6.50	4.10	0.89	0.22	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.915	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	324.2214	80.8469	313.9798	1110.6949	0.2919	-0.1608	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.4668	9.8766	521.4001	511.3280	36.8827	14.4395	32.4000	17.9605

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	321.3166	72.0619	313.1317	1110.8480	0.2893	-0.1610	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4527     9.8735   521.5491   511.3484   432.2457     0.0375     0.1044

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   319.5206     0.0000   319.5206  1110.9382     0.2876    -0.0624     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.8397   521.6409   511.5417     0.0000     0.0600     0.1198    -0.2266

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.5689    10.4102     1.0127   529.6908     3.1744   388.3673     3.0106

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  20126.895       0.294      54.420  451947.313   0.652204E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-4.839   EfDer =  0.854    SH =  0.711818E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     47.846    1587.053      10.410     529.690       1.000       1.000       0.980
 W Kg/sec =  21.748  Wdry =  47.506  WH2O = 0.341  lbm/sec   H2O =   5.870g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     68.274    1570.501       1.372       0.254      53.579      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  55879.762   37436.582       2.539     509.668     200.733     384.739       1.917

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   263.12    -0.09   263.12     0.24     0.33   251.07
 MEAN    15.91     0.00    -0.02   263.12    -0.09   263.12     0.24     0.31
 HUB     13.07     0.00    -0.02   263.12    -0.09   263.12     0.24     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     43.97    47.36    -3.39   253.73   365.59    10.02   524.24   511.73    38.12
 MEAN    39.96    44.80    -4.84   220.39   343.29    10.02   524.24   511.73    38.12
 HUB     34.54    38.84    -4.30   181.01   319.43    10.02   524.24   511.73    38.12

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   289.80    42.23   286.70  1114.11      0.26     2.05     1.78     7.43
 MEAN    15.50   293.45    63.80   286.43  1114.47      0.26     2.13     1.86     5.75
 HUB     12.59   310.68   120.30   286.45  1114.82      0.28     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    248.46   353.17   206.23     0.32   759.25      0.92     0.78
 MEAN   214.64   323.72   150.83     0.29   990.22      0.92     0.78     0.78     1.13
 HUB    174.37   291.50    54.07     0.26  1515.72      0.92     0.78

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.50     1.01    10.03   531.34     1.00   524.74   513.27    38.79
 MEAN    10.53     1.01    10.05   531.85     1.00   525.07   513.52    38.40
 HUB     10.60     1.02    10.05   532.99     1.01   525.40   514.27    37.99

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      8.38    35.73    31.50     4.23     0.93     0.07     1.40
 MEAN    12.56    27.77    23.50     4.27     0.88     0.11     1.64
 HUB     22.78    10.69     6.50     4.19     0.88     0.18     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.854       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   333.1611    64.9721   326.7644  1112.5869     0.2994    -0.2689     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.5351     9.9116   523.3356   514.4630    40.5587    11.2457    33.0000    21.7543
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   340.5151    77.7569   331.5183  1112.1692     0.3062    -0.3811     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.5003     9.8519   522.9477   514.6550   410.5396     0.0894     0.0751

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   331.6349     0.0000   331.6349  1112.6626     0.2981    -0.0814     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.8609   523.4179   514.7097     0.0000     0.0600     0.1393    -0.3631

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.3769    10.4752     1.0062   532.0616     2.3716   480.6592     3.7260

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  15085.707       0.244      40.789  481864.000   0.762031E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.0429   Tt4 =   532.0616   T1  =   510.1643

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    138638.59    374.8555     74.7042      1.1219      0.7411      7.0734     1.0429     37.3740
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5µm, 4g/m^3, ISA +27R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 39000 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.682   EfDer =  0.953    SH =  0.148360E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     26.148    2453.875       4.265     467.813       1.000       1.000       0.980
  W Kg/sec =  11.886  Wdry =  26.109  WH2O = 0.039  lbm/sec   H2O =   0.576g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     85.599    2583.841       1.380       0.249      53.396      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64836.375   20505.209       3.316     831.557     250.770     619.754       2.471

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   187.13    -0.06   187.13     0.18     0.46   465.16
 MEAN    17.06     0.00    -0.02   187.13    -0.06   187.13     0.18     0.39
 HUB     12.51     0.00    -0.02   187.13    -0.06   187.13     0.18     0.31

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.05    50.47    16.58   441.77   479.83      4.17   465.01   459.55    35.37
 MEAN    62.88    47.20    15.68   365.33   410.52      4.17   465.01   459.55    35.37
 HUB     55.07    38.62    16.45   267.89   326.83      4.17   465.01   459.55    35.37

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   395.36   306.05   250.28  1063.28      0.37     7.29     6.52    16.04
 MEAN    18.04   399.63   308.82   253.63  1060.13      0.38     7.43     6.80    12.53
 HUB     15.00   432.18   346.55   258.24  1056.27      0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    441.77   284.71   135.72     0.27  6315.20      0.92     0.87
 MEAN   386.23   265.18    77.40     0.25  5571.07      0.92     0.87     0.87     1.78
 HUB    321.21   259.48    25.33     0.25  5198.99      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.92     1.15     4.48   489.48     1.05   476.96   475.94    32.23
 MEAN     4.84     1.14     4.40   486.92     1.04   474.13   474.75    35.75
 HUB      4.80     1.13     4.29   485.65     1.04   470.69   474.75    40.58

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.72    28.47    24.20     4.27     0.93     0.58     1.80
 MEAN    50.60    16.97    12.70     4.27     0.95     0.53     2.22
 HUB     53.31    -5.60    -9.30     3.70     0.95     0.40     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950      1.000       0.953       1.812     33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   411.1591   308.2248   272.1199  1059.6775     0.3880    -0.0352     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8517     4.3797   473.8361   475.4472    37.4606    48.5599    35.4000   -13.1599

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   269.8859    66.0223   261.6858  1068.2133     0.2527     0.5209     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8391     4.6320   481.5273   473.8109   554.9116     0.0367     0.6141

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   268.8453     0.0000   268.8453  1068.2122     0.2517     0.4890     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.6105	481.5745	475.0002	0.0000	0.0600	0.0883	0.4751

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8108	4.8150	1.1291	487.3473	19.5370	166.7141	1.2924

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
122214.727	0.626	180.592	269875.188	0.280082E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =15.262 EfDer = 0.956 SH = 0.415892E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.148	2453.875	4.815	487.345	1.000	1.000	0.980

W Kg/sec = 11.886 Wdry = 26.039 WH2O = 0.109 lbm/sec H2O = 1.730g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
77.379	2531.578	1.376	0.251	53.483	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60553.738	20483.504	2.601	590.487	227.056	468.502	2.063

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	246.09	-0.08	246.09	0.23	0.47	453.98
MEAN	18.08	0.00	-0.02	246.09	-0.08	246.09	0.23	0.43	
HUB	15.21	0.00	-0.02	246.09	-0.08	246.09	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.79	46.36	14.43	440.06	504.27	4.64	482.53	478.28	51.12
MEAN	57.56	42.30	15.26	387.13	458.80	4.64	482.53	478.28	51.12
HUB	52.93	37.84	15.09	325.71	408.29	4.64	482.53	478.28	51.12

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	363.61	255.28	258.94	1082.25	0.34	2.33	2.04	9.02
MEAN	18.01	362.83	251.41	261.61	1079.75	0.34	2.40	2.13	7.35
HUB	15.22	384.10	278.44	264.57	1077.29	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	437.28	316.50	182.00	0.29	5214.53	0.92	0.87		
MEAN	385.67	294.04	134.25	0.27	4529.48	0.92	0.87	0.87	1.72
HUB	325.99	268.81	47.54	0.25	4240.05	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.40	1.12	5.00	505.09	1.04	494.58	488.77	35.58
MEAN	5.32	1.10	4.93	502.75	1.03	492.30	487.79	38.41
HUB	5.29	1.10	4.85	501.77	1.03	490.05	487.86	41.41

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	44.59	35.10	31.50	3.60	0.93	0.55	1.40
MEAN	43.86	27.17	23.50	3.67	0.95	0.53	1.63
HUB	46.46	10.19	6.50	3.69	0.95	0.51	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.956	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	387.6767	252.1191	294.4982	1078.5642	0.3594	-0.1052	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3317	4.8835	491.2748	488.6242	40.0864	40.5667	30.6000	-9.9667

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	284.7268	60.3641	278.2544	1084.5680	0.2625	0.3765	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.3250	5.0800	496.7690	486.8398	491.5697	0.0263	0.4718

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	295.1822	0.0000	295.1822	1084.0194	0.2723	0.3618	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0457	496.2895	487.4977	0.0000	0.0600	0.0682	0.2929

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8284	5.3078	1.1024	503.2021	15.8580	187.3870	1.4526

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
99913.039	0.523	147.637	245278.422	0.476442E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.283 EfDer = 0.972 SH = 0.561307E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.148	2453.875	5.308	503.201	1.000	1.000	0.980

W Kg/sec = 11.886 Wdry = 26.001 WH2O = 0.147 lbm/sec H2O = 2.490g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
71.327	2491.376	1.374	0.253	53.530	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56765.191	20471.631	2.604	545.479	209.496	424.468	2.026

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	249.74	-0.09	249.74	0.23	0.46	436.34
MEAN	17.74	0.00	-0.02	249.74	-0.09	249.74	0.23	0.42	
HUB	15.05	0.00	-0.02	249.74	-0.09	249.74	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.84	46.36	13.48	429.78	497.15	5.12	498.27	488.62	40.14
MEAN	56.68	43.40	13.28	379.85	454.67	5.12	498.27	488.62	40.14
HUB	52.23	38.84	13.39	322.28	407.79	5.12	498.27	488.62	40.14

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	355.25	239.14	262.70	1097.93	0.32	2.26	1.98	8.75
MEAN	17.51	356.51	238.42	265.06	1095.79	0.33	2.34	2.07	6.78
HUB	14.85	379.79	269.44	267.67	1093.69	0.35	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	424.21	321.34	185.07	0.29	4739.18	0.92	0.89		
MEAN	374.89	298.13	136.47	0.27	4175.42	0.92	0.89	0.89	1.67
HUB	318.00	272.04	48.56	0.25	4002.46	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.88	1.11	5.48	519.25	1.03	509.27	497.55	30.01
MEAN	5.81	1.09	5.41	517.34	1.03	507.29	496.86	31.90
HUB	5.79	1.09	5.33	516.76	1.03	505.35	497.16	33.87

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	42.31	35.16	31.50	3.66	0.93	0.52	1.40
MEAN	41.97	27.24	23.50	3.74	0.94	0.51	1.62
HUB	45.19	10.28	6.50	3.78	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.972	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	382.5519	239.9835	297.9159	1094.5707	0.3495	-0.1132	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.8233	5.3596	506.2228	497.7233	33.2898	38.8529	31.5000	-7.3529

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	292.9572	63.9066	285.9018	1099.7161	0.2664	0.3266	2.3726

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8189     5.5438   511.0037   496.1510   451.3937     0.0204     0.4467

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   297.9671     0.0000   297.9671  1099.4454     0.2710     0.3477     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5208   510.7719   496.7731     0.0000     0.0600     0.0545     0.2721

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8495     5.8045     1.0936   517.7809    14.5810   192.5233     1.4924

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  92313.570       0.513     136.408  243885.156   0.644717E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =11.703   EfDer =  0.982    SH =  0.745601E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.148    2453.875       5.805     517.776       1.000       1.000       0.980
 W Kg/sec =  11.886  Wdry =  25.953  WH2O = 0.195  lbm/sec   H2O =   3.514g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     66.162    2456.052       1.372       0.254      53.590      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  53432.551   20456.510       2.639     513.330     194.544     395.845       2.035

ROTOR LEADING EDGE CONDITIONS, STAGE   4

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    19.26     0.00    -0.02   249.80    -0.09   249.80     0.23     0.44   412.79
 MEAN   16.97     0.00    -0.02   249.80    -0.09   249.80     0.23     0.40
 HUB    14.32     0.00    -0.02   249.80    -0.09   249.80     0.23     0.36

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    58.80    46.36    12.44   412.44   482.26     5.60   512.87   497.80    33.56
 MEAN   55.50    43.80    11.70   363.41   441.06     5.60   512.87   497.80    33.56
 HUB    50.84    37.84    13.00   306.65   395.58     5.60   512.87   497.80    33.56

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    18.88   341.76   219.44   262.00  1111.83      0.31     2.16     1.89     8.34
 MEAN   16.57   342.99   218.82   264.13  1109.90      0.31     2.24     1.97     6.35
 HUB    13.89   364.83   249.20   266.46  1108.01      0.33     2.26     2.10     4.19

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   404.30   320.64   184.85     0.29  4144.78      0.92     0.90
 MEAN  354.91   297.13   136.10     0.27  3628.10      0.92     0.90     0.90     1.63
 HUB   297.44   270.79    48.24     0.24  3462.64      0.92     0.90

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.34     1.09     5.95   531.72     1.03   522.53   504.87    25.98
 MEAN    6.27     1.08     5.88   529.98     1.02   520.73   504.29    27.37
 HUB     6.25     1.08     5.81   529.42     1.02   518.96   504.56    28.80

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    39.95    35.21    31.50     3.71     0.93     0.50     1.40
 MEAN   39.64    27.26    23.50     3.76     0.94     0.48     1.62
 HUB    43.08    10.26     6.50     3.76     0.94     0.48     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.982       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   363.7563   220.0472   289.6513  1109.0475     0.3280    -0.0896     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.2825     5.8399   519.9660   504.9283    28.1198    37.2238    32.4000    -4.8238
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   290.7170    65.1993   283.3115  1113.0216     0.2612     0.2870     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2802     5.9937   523.7067   503.6030   432.2457     0.0156     0.4254

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   288.3533     0.0000   288.3533  1113.0695     0.2591     0.3348     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9881   523.7619   503.7028     0.0000     0.0600     0.0445     0.2733

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8703     6.2683     1.0799   530.2932    12.5988   207.6050     1.6093

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  80181.359       0.491     118.481  249740.516   0.790864E-02

Melt Ratio at Stator LE, Throat, TE
0.34584E+00 0.42431E+00 0.65225E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =10.271   EfDer =  0.990    SH =  0.825800E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.148    2453.875       6.268     530.269       1.000       1.000       0.980
 W Kg/sec =  11.886  Wdry =  25.932  WH2O = 0.216  lbm/sec   H2O =   4.114g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.002    2426.904       1.371       0.255      53.616      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50549.941   20449.904       2.794     509.668     182.408     384.739       2.109

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   238.03    -0.08   238.03     0.21     0.41   387.98
 MEAN    15.91     0.00    -0.02   238.03    -0.08   238.03     0.21     0.37
 HUB     13.07     0.00    -0.02   238.03    -0.08   238.03     0.21     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.76    47.36    11.40   392.31   458.94     6.08   525.82   503.51    25.38
 MEAN    55.07    44.80    10.27   340.76   415.73     6.08   525.82   503.51    25.38
 HUB     49.63    38.84    10.79   279.88   367.48     6.08   525.82   503.51    25.38

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   324.40   206.44   250.24  1124.28      0.29     2.05     1.78     7.43
 MEAN    15.50   322.68   201.15   252.32  1122.30      0.29     2.13     1.86     5.75
 HUB     12.59   338.72   223.48   254.53  1120.34      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    384.17   306.93   177.73     0.27  3705.03      0.92     0.91
 MEAN   331.87   284.17   130.72     0.25  3118.66      0.92     0.91     0.91     1.62
 HUB    269.60   258.68    46.13     0.23  2814.65      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.77     1.08     6.40   542.69     1.02   534.43   509.43    20.38
 MEAN     6.69     1.07     6.33   540.72     1.02   532.55   508.74    21.45
 HUB      6.65     1.06     6.25   539.70     1.02   530.70   508.68    22.56

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.52    35.38    31.50     3.88     0.93     0.49     1.40
 MEAN    38.56    27.39    23.50     3.89     0.94     0.46     1.64
 HUB     41.28    10.27     6.50     3.77     0.94     0.44     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.990       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   352.7129   204.8390   287.1366  1120.9252     0.3147    -0.1683     2.0437
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    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6976     6.2620   531.2809   509.5573    22.4689    35.5035    33.0000    -2.5035

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   293.2480    66.9634   285.5001  1124.0817     0.2609     0.1754     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6953     6.3920   534.2937   508.7135   410.5396     0.0261     0.4012

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   285.3049     0.0000   285.3049  1124.4359     0.2537     0.3246     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.4034   534.6557   509.2434     0.0000     0.0600     0.0388     0.2055

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8748     6.6905     1.0673   541.0322    10.7657   226.8244     1.7583

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  68669.039       0.465     101.469  261977.047   0.915785E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.1565   Tt4 =   541.0322   T1  =   467.8131

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    463291.72    684.5869     85.5988      1.5688      0.8325     15.6817     1.1565     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 38334 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.722   EfDer =  0.952    SH =  0.127711E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.247    2375.534       4.199     461.505       1.000       1.000       0.980
  W Kg/sec =  11.476  Wdry =  25.215  WH2O = 0.032  lbm/sec   H2O =   0.496g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.367    2518.393       1.380       0.249      53.390      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  62657.910   19800.420       3.405     831.557     244.197     619.754       2.538

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   180.84    -0.06   180.84     0.17     0.45   453.37
 MEAN    17.06     0.00    -0.02   180.84    -0.06   180.84     0.17     0.38
 HUB     12.51     0.00    -0.02   180.84    -0.06   180.84     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.08    50.47    16.61   427.67   464.39     4.11   458.88   455.06    39.90
 MEAN    62.92    47.20    15.72   353.66   397.27     4.11   458.88   455.06    39.90
 HUB     55.12    38.62    16.50   259.34   316.21     4.11   458.88   455.06    39.90

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   382.83   296.25   242.47  1055.64      0.36     7.29     6.52    16.04
 MEAN    18.04   386.88   298.97   245.54  1052.67      0.37     7.43     6.80    12.53
 HUB     15.00   418.22   335.44   249.77  1049.04      0.40     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    427.67   275.80   131.42     0.26  6112.87      0.92     0.87
 MEAN   373.89   256.72    74.92     0.24  5393.32      0.92     0.87     0.87     1.78
 HUB    310.96   250.97    24.49     0.24  5032.44      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.81     1.15     4.40   481.82     1.04   470.07   470.95    36.04
 MEAN     4.74     1.13     4.32   479.43     1.04   467.43   469.74    39.86
 HUB      4.70     1.12     4.22   478.23     1.04   464.21   469.66    45.07

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.70    28.46    24.20     4.26     0.93     0.58     1.80
 MEAN    50.60    16.97    12.70     4.27     0.95     0.53     2.22
 HUB     53.33    -5.60    -9.30     3.70     0.95     0.40     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.952       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   398.0026   298.3906   263.3801  1052.2568     0.3782    -0.0353     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.7469     4.3066   467.1489   470.3736    41.6441    48.5662    35.4000   -13.1662

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   261.7397    64.0295   253.7871  1060.3005     0.2469     0.5205     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.7357     4.5418   474.3433   468.9131   554.9116     0.0358     0.6131

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   260.6887     0.0000   260.6887  1060.2970     0.2459     0.4878     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.5214   474.3892   469.9637     0.0000     0.0600     0.0883     0.4738
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8109     4.7127     1.1223   479.8239    18.3219   166.6308     1.2917

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 114479.914       0.626     163.335  263028.906   0.232948E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.219   EfDer =  0.957    SH =  0.339451E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.247    2375.534       4.713     479.822       1.000       1.000       0.980
 W Kg/sec =  11.476  Wdry =  25.162  WH2O = 0.086  lbm/sec   H2O =   1.406g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.743    2469.895       1.377       0.251      53.458      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58716.637   19783.859       2.658     590.487     222.152     468.502       2.109

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   238.63    -0.08   238.63     0.22     0.46   442.92
 MEAN    18.08     0.00    -0.02   238.63    -0.08   238.63     0.22     0.42
 HUB     15.21     0.00    -0.02   238.63    -0.08   238.63     0.22     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.75    46.36    14.39   426.01   488.37     4.55   475.29   472.80    55.79
 MEAN    57.52    42.30    15.22   374.77   444.37     4.55   475.29   472.80    55.79
 HUB     52.89    37.84    15.05   315.31   395.50     4.55   475.29   472.80    55.79

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950       77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   352.28   246.44   251.73  1073.59      0.33     2.33     2.04     9.02
 MEAN    18.01   351.63   242.96   254.19  1071.24      0.33     2.40     2.13     7.35
 HUB     15.22   372.28   269.42   256.92  1068.92      0.35     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    423.32   307.66   176.88     0.29  5034.00      0.92     0.88
 MEAN   373.35   285.68   130.39     0.27  4377.25      0.92     0.88     0.88     1.71
 HUB    315.58   261.03    46.16     0.24  4102.61      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.26     1.12     4.88   496.44     1.03   486.56   483.16    39.19
 MEAN     5.18     1.10     4.82   494.27     1.03   484.43   482.16    42.22
 HUB      5.15     1.09     4.74   493.37     1.03   482.33   482.18    45.42

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     44.39    35.09    31.50     3.59     0.93     0.55     1.40
 MEAN    43.71    27.16    23.50     3.66     0.95     0.52     1.63
 HUB     46.36    10.19     6.50     3.69     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.957       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   375.7550   243.6459   286.0568  1070.1019     0.3511    -0.1059     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.1928     4.7748   483.4592   482.9341    44.0283    40.4223    30.6000    -9.8223

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   276.9678    58.7191   270.6718  1075.7545     0.2575     0.3732     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.1869     4.9569   488.5900   481.3515   491.5697     0.0254     0.4686

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   287.0639     0.0000   287.0639  1075.2301     0.2670     0.3590     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9248	488.1382	481.9441	0.0000	0.0600	0.0674	0.2894

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8293	5.1708	1.0972	494.6930	14.8720	187.8057	1.4559

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
93460.539	0.522	133.345	239231.281	0.387499E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.155 EfDer = 0.973 SH = 0.454845E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.247	2375.534	5.171	494.692	1.000	1.000	0.980

W Kg/sec = 11.476 Wdry = 25.133 WH2O = 0.115 lbm/sec H2O = 2.003g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.095	2432.493	1.376	0.252	53.496	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55219.727	19774.789	2.651	545.479	205.742	424.468	2.063

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	242.94	-0.08	242.94	0.23	0.45	426.02
MEAN	17.74	0.00	-0.02	242.94	-0.08	242.94	0.23	0.41	
HUB	15.05	0.00	-0.02	242.94	-0.08	242.94	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.72	46.36	13.36	416.06	481.87	4.99	490.01	482.94	44.13
MEAN	56.55	43.40	13.15	367.73	440.80	4.99	490.01	482.94	44.13
HUB	52.10	38.84	13.26	311.99	395.49	4.99	490.01	482.94	44.13

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	344.45	230.29	256.15	1088.39	0.32	2.26	1.98	8.75
MEAN	17.51	345.85	229.95	258.33	1086.38	0.32	2.34	2.07	6.78
HUB	14.85	368.62	260.58	260.73	1084.41	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	410.67	313.29	180.38	0.29	4563.72	0.92	0.89		
MEAN	362.92	290.54	132.97	0.27	4027.12	0.92	0.89	0.89	1.66
HUB	307.85	264.98	47.26	0.24	3870.92	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.70	1.10	5.32	509.70	1.03	500.29	491.72	33.24
MEAN	5.64	1.09	5.26	507.94	1.03	498.45	491.03	35.29
HUB	5.62	1.09	5.19	507.42	1.03	496.64	491.29	37.39

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.96	35.15	31.50	3.65	0.93	0.52	1.40
MEAN	41.67	27.24	23.50	3.74	0.94	0.50	1.62
HUB	44.98	10.27	6.50	3.77	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.973	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	371.2485	231.4592	290.2621	1085.2119	0.3421	-0.1141	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6478	5.2156	497.4305	491.8335	36.8124	38.5694	31.5000	-7.0694

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	285.8046	62.3463	278.9215	1090.0453	0.2622	0.3204	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6440	5.3850	501.8805	490.4344	451.3937	0.0195	0.4414

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	290.6372	0.0000	290.6372	1089.7864	0.2667	0.3430	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3638	501.6612	491.0019	0.0000	0.0600	0.0532	0.2663

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8512	5.6308	1.0890	508.3532	13.6625	193.5172	1.5001

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
86200.102	0.511	122.986	238125.766	0.521743E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.494 EfDer = 0.983 SH = 0.612747E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.247	2375.534	5.631	508.352	1.000	1.000	0.980

W Kg/sec = 11.476 Wdry = 25.093 WH2O = 0.155 lbm/sec H2O = 2.858g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.251	2399.587	1.374	0.253	53.547	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52132.102	19762.322	2.678	513.330	191.710	395.845	2.065

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	243.72	-0.08	243.72	0.22	0.43	403.30
MEAN	16.97	0.00	-0.02	243.72	-0.08	243.72	0.22	0.39	
HUB	14.32	0.00	-0.02	243.72	-0.08	243.72	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.60	46.36	12.24	399.27	467.85	5.44	503.66	492.13	37.81
MEAN	55.29	43.80	11.49	351.81	428.05	5.44	503.66	492.13	37.81
HUB	50.62	37.84	12.78	296.86	384.15	5.44	503.66	492.13	37.81

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	331.68	210.72	256.14	1101.52	0.30	2.16	1.89	8.34
MEAN	16.57	333.12	210.60	258.10	1099.72	0.30	2.24	1.97	6.35
HUB	13.89	354.58	240.82	260.25	1097.95	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	391.39	313.45	180.67	0.28	3979.98	0.92	0.90		
MEAN	343.58	290.35	132.98	0.26	3491.94	0.92	0.90	0.90	1.62
HUB	287.95	264.48	47.12	0.24	3346.23	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.12	1.09	5.76	521.38	1.03	512.69	499.40	30.22
MEAN	6.06	1.08	5.69	519.78	1.02	511.02	498.83	31.80
HUB	6.04	1.07	5.63	519.30	1.02	509.38	499.10	33.41

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	39.44	35.20	31.50	3.70	0.93	0.49	1.40
MEAN	39.21	27.26	23.50	3.76	0.94	0.47	1.62
HUB	42.78	10.26	6.50	3.76	0.94	0.47	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.983	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	353.5004	211.7880	283.0342	1098.8789	0.3217	-0.0909	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.0718	5.6591	510.2997	499.5114	32.8148	36.8067	32.4000	-4.4067

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	284.3522	63.7719	277.1088	1102.6042	0.2579	0.2808	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.0699     5.8004   513.7763   498.3818   432.2457     0.0149     0.4180

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   282.0923     0.0000   282.0923  1102.6802     0.2558     0.3279     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.7944   513.8638   498.7295     0.0000     0.0600     0.0432     0.2651

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8672     6.0591     1.0761   520.1359    11.8028   209.0408     1.6205

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  74844.656       0.489     106.785  244079.906   0.688811E-02

Melt Ratio at Stator LE, Throat, TE
0.81464E-02 0.27967E-01 0.12475E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.972   EfDer =  0.992    SH =  0.762140E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.247    2375.534       6.059     520.125       1.000       1.000       0.980
 W Kg/sec =  11.476  Wdry =  25.055  WH2O = 0.192  lbm/sec   H2O =   3.745g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     61.338    2372.253       1.372       0.254      53.596      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  49483.102   19750.475       2.826     509.668     180.381     384.739       2.133

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   233.00    -0.08   233.00     0.21     0.40   379.25
 MEAN   15.91     0.00    -0.02   233.00    -0.08   233.00     0.21     0.37
 HUB    13.07     0.00    -0.02   233.00    -0.08   233.00     0.21     0.32

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    58.48    47.36    11.12   379.78   445.63     5.88   515.86   499.26    32.26
 MEAN   54.77    44.80     9.97   329.88   403.94     5.88   515.86   499.26    32.26
 HUB    49.31    38.84    10.47   270.95   357.41     5.88   515.86   499.26    32.26

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   315.10   197.65   245.41  1113.20      0.28     2.05     1.78     7.43
 MEAN   15.50   313.83   193.18   247.33  1111.36      0.28     2.13     1.86     5.75
 HUB    12.59   329.79   215.81   249.37  1109.54      0.30     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   371.90   300.98   174.26     0.27  3547.28      0.92     0.91
 MEAN  321.27   278.53   128.10     0.25  2995.03      0.92     0.91     0.91     1.61
 HUB   261.00   253.43    45.18     0.23  2718.13      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.52     1.08     6.18   531.66     1.02   523.86   505.09    26.08
 MEAN    6.45     1.06     6.11   529.86     1.02   522.12   504.42    27.42
 HUB     6.41     1.06     6.04   528.96     1.02   520.42   504.41    28.79

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    38.85    35.38    31.50     3.88     0.93     0.48     1.40
 MEAN   37.99    27.38    23.50     3.88     0.94     0.45     1.64
 HUB    40.87    10.27     6.50     3.77     0.94     0.44     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.992       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   343.3413   196.7172   281.3993  1110.0125     0.3093    -0.1706     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.4529     6.0465   520.8899   505.1354    28.4879    34.9562    33.0000    -1.9562
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   287.7029    65.6972   280.1015  1112.9237     0.2585     0.1589     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.4511     6.1625   523.6314   504.1566   410.5396     0.0251     0.3923

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   279.8035     0.0000   279.8035  1113.2314     0.2513     0.3156     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.1748   523.9288   504.1417     0.0000     0.0600     0.0379     0.1936

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8848     6.4465     1.0639   530.0771    10.0388   229.2761     1.7773

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  63909.262       0.462      91.183  256383.125   0.795038E-02

Melt Ratio at Stator LE, Throat, TE
0.55194E+00 0.62258E+00 0.83135E+00
 trTOT =     1.1486   Tt4 =   530.0771   T1  =   461.5047

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    432894.47    617.6337     83.3671      1.5351      0.8343     15.7219      1.1486     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 37357 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.744   EfDer =  0.952    SH =  0.115699E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.835    2344.952       4.337     459.574       1.000       1.000       0.980
  W Kg/sec =  11.743  Wdry =  25.805  WH2O = 0.030  lbm/sec   H2O =   0.466g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.424    2491.189       1.380       0.249      53.386      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  61792.938   20262.127       3.444     831.557     241.416     619.754       2.567

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   178.34    -0.06   178.34     0.17     0.44   448.48
 MEAN    17.06     0.00    -0.02   178.34    -0.06   178.34     0.17     0.38
 HUB     12.51     0.00    -0.02   178.34    -0.06   178.34     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.10    50.47    16.63   422.16   458.35      4.25   457.02   453.71    40.79
 MEAN    62.94    47.20    15.74   349.11   392.08      4.25   457.02   453.71    40.79
 HUB     55.14    38.62    16.52   256.00   312.05      4.25   457.02   453.71    40.79

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   377.90   292.42   239.37  1053.24      0.36     7.29     6.52    16.04
 MEAN    18.04   381.89   295.15   242.33  1050.35      0.36     7.43     6.80    12.53
 HUB     15.00   412.73   331.11   246.40  1046.80      0.39     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    422.16   272.27   129.74     0.26  6033.89      0.92     0.87
 MEAN   369.08   253.35    73.93     0.24  5324.39      0.92     0.87     0.87     1.78
 HUB    306.95   247.58    24.15     0.24  4967.36      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.96     1.14     4.54   479.38     1.04   467.92   469.40    36.88
 MEAN     4.88     1.13     4.46   477.05     1.04   465.35   468.17    40.72
 HUB      4.84     1.12     4.36   475.88     1.04   462.22   468.03    45.95

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.70    28.46    24.20     4.26     0.93     0.58     1.80
 MEAN    50.61    16.97    12.70     4.27     0.95     0.53     2.22
 HUB     53.34    -5.60    -9.30     3.70     0.95     0.40     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.952       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   392.8443   294.5771   259.9056  1049.9492     0.3742    -0.0354     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.8899     4.4454   465.0758   468.7715    42.5135    48.5780    35.4000   -13.1780

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   258.4956    63.2359   250.6416  1057.8020     0.2444     0.5205     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.8787     4.6829   472.0825   467.4207   554.9116     0.0354     0.6128

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   257.4409     0.0000   257.4409  1057.7998     0.2434     0.4874     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.6621   472.1278   468.3948     0.0000     0.0600     0.0884     0.4734
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8108     4.8554     1.1195   477.4312    17.8595   166.5765     1.2913

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 111529.672       0.626     162.828  269897.406   0.209060E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.208   EfDer =  0.957    SH =  0.303301E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.835    2344.952       4.855     477.430       1.000       1.000       0.980
 W Kg/sec =  11.743  Wdry =  25.757  WH2O = 0.078  lbm/sec   H2O =   1.302g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.041    2444.200       1.378       0.251      53.447      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57985.035   20247.125       2.683     590.487     220.044     468.502       2.129

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   235.66    -0.08   235.66     0.22     0.46   438.31
 MEAN   18.08     0.00    -0.02   235.66    -0.08   235.66     0.22     0.41
 HUB    15.21     0.00    -0.02   235.66    -0.08   235.66     0.22     0.37

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    60.74    46.36    14.38   420.53   482.13     4.69   473.00   471.03    56.81
 MEAN   57.51    42.30    15.21   369.95   438.70     4.69   473.00   471.03    56.81
 HUB    52.88    37.84    15.04   311.25   390.47     4.69   473.00   471.03    56.81

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   347.85   243.05   248.86  1070.81     0.32     2.33     2.04     9.02
 MEAN   18.01   347.22   239.68   251.23  1068.51     0.32     2.40     2.13     7.35
 HUB    15.22   367.64   265.92   253.87  1066.25     0.34     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   417.87   304.13   174.82     0.28  4964.68     0.92     0.88
 MEAN  368.55   282.35   128.87     0.26  4318.03     0.92     0.88     0.88     1.71
 HUB   311.52   257.93    45.60     0.24  4049.34     0.92     0.88

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     5.40     1.11     5.03   493.63     1.03   483.98   481.37    40.11
 MEAN    5.33     1.10     4.96   491.52     1.03   481.91   480.36    43.16
 HUB     5.30     1.09     4.89   490.64     1.03   479.87   480.34    46.38

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    44.32    35.09    31.50     3.59     0.93     0.55     1.40
 MEAN   43.65    27.16    23.50     3.66     0.95     0.52     1.63
 HUB    46.33    10.18     6.50     3.68     0.95     0.51     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.957       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   371.0534   240.3493   282.6886  1067.3960     0.3476    -0.1060     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   5.3392     4.9174   480.9602   481.0994    44.9884    40.3721    30.6000    -9.7721

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   273.8688    58.0621   267.6433  1072.9126     0.2553     0.3721     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     5.3334     5.1007   485.9531   479.6275   491.5697     0.0250     0.4674

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   283.8217     0.0000   283.8217  1072.3979     0.2647     0.3579     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0684	485.5122	480.1827	0.0000	0.0600	0.0671	0.2882

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8295	5.3172	1.0951	491.9273	14.4990	187.9374	1.4569

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
91010.484	0.521	132.871	245548.859	0.345859E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.109 EfDer = 0.973 SH = 0.405559E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.835	2344.952	5.317	491.926	1.000	1.000	0.980

W Kg/sec = 11.743 Wdry = 25.730 WH2O = 0.105 lbm/sec H2O = 1.848g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.556	2407.917	1.376	0.251	53.480	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54602.617	20238.908	2.673	545.479	204.101	424.468	2.080

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	240.23	-0.08	240.23	0.22	0.44	421.72
MEAN	17.74	0.00	-0.02	240.23	-0.08	240.23	0.22	0.41	
HUB	15.05	0.00	-0.02	240.23	-0.08	240.23	0.22	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.68	46.36	13.32	410.70	475.87	5.14	487.34	481.12	45.15
MEAN	56.51	43.40	13.11	362.99	435.36	5.14	487.34	481.12	45.15
HUB	52.05	38.84	13.21	307.98	390.65	5.14	487.34	481.12	45.15

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	340.21	226.85	253.53	1085.26	0.31	2.26	1.98	8.75
MEAN	17.51	341.67	226.70	255.63	1083.31	0.32	2.34	2.07	6.78
HUB	14.85	364.22	257.13	257.95	1081.39	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	405.38	310.08	178.53	0.29	4495.62	0.92	0.89		
MEAN	358.25	287.49	131.55	0.27	3970.21	0.92	0.89	0.89	1.66
HUB	303.88	262.16	46.75	0.24	3819.62	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.85	1.10	5.47	506.54	1.03	497.35	489.88	34.15
MEAN	5.79	1.09	5.41	504.84	1.03	495.56	489.17	36.22
HUB	5.77	1.08	5.34	504.35	1.03	493.81	489.41	38.36

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.82	35.15	31.50	3.65	0.93	0.52	1.40
MEAN	41.57	27.23	23.50	3.73	0.94	0.50	1.62
HUB	44.91	10.27	6.50	3.77	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.973	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	366.8175	228.1876	287.2029	1082.1594	0.3390	-0.1146	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7971	5.3610	494.5604	489.9443	37.7860	38.4677	31.5000	-6.9677

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	282.9402	61.7215	276.1260	1086.8732	0.2603	0.3181	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7935	5.5312	498.8869	488.6380	451.3937	0.0192	0.4394

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	287.7026	0.0000	287.7026	1086.6199	0.2648	0.3412	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5098	498.6725	489.1730	0.0000	0.0600	0.0527	0.2640

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8518	5.7802	1.0871	505.2407	13.3155	193.8853	1.5030

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
83878.781	0.510	122.459	244518.453	0.464940E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.416 EfDer = 0.984 SH = 0.545625E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.835	2344.952	5.780	505.240	1.000	1.000	0.980

W Kg/sec = 11.743 Wdry = 25.694 WH2O = 0.141 lbm/sec H2O = 2.631g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
64.845	2375.980	1.374	0.253	53.525	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51609.598	20227.615	2.695	513.330	190.440	395.845	2.079

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	241.28	-0.08	241.28	0.22	0.42	399.33
MEAN	16.97	0.00	-0.02	241.28	-0.08	241.28	0.22	0.39	
HUB	14.32	0.00	-0.02	241.28	-0.08	241.28	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.53	46.36	12.17	394.13	462.19	5.59	500.63	490.24	38.85
MEAN	55.22	43.80	11.42	347.28	422.94	5.59	500.63	490.24	38.85
HUB	50.54	37.84	12.70	293.04	379.65	5.59	500.63	490.24	38.85

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	327.74	207.38	253.79	1098.10	0.30	2.16	1.89	8.34
MEAN	16.57	329.25	207.43	255.69	1096.35	0.30	2.24	1.97	6.35
HUB	13.89	350.53	237.55	257.76	1094.63	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	386.35	310.54	178.97	0.28	3916.96	0.92	0.90		
MEAN	339.16	287.62	131.73	0.26	3439.37	0.92	0.90	0.90	1.61
HUB	284.24	261.95	46.68	0.24	3300.83	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.27	1.09	5.90	517.92	1.03	509.42	497.49	31.18
MEAN	6.21	1.07	5.84	516.37	1.02	507.80	496.91	32.78
HUB	6.19	1.07	5.78	515.93	1.02	506.21	497.15	34.42

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	39.25	35.19	31.50	3.69	0.93	0.49	1.40
MEAN	39.05	27.26	23.50	3.76	0.94	0.47	1.62
HUB	42.66	10.27	6.50	3.77	0.94	0.47	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.984	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	349.4502	208.5989	280.3604	1095.5255	0.3190	-0.0913	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.2232	5.8068	507.0900	497.5631	33.8238	36.6507	32.4000	-4.2507

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	281.7843	63.1960	274.6064	1099.1544	0.2564	0.2778	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.2214	5.9483	510.4660	496.5248	432.2457	0.0146	0.4153

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	279.5488	0.0000	279.5488	1099.2426	0.2543	0.3253	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.9422	510.5646	496.9612	0.0000	0.0600	0.0428	0.2620

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8666	6.2105	1.0745	516.7372	11.5005	209.6776	1.6254

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
72775.008	0.488	106.248	250720.859	0.620032E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.15663E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.861 EfDer = 0.992 SH = 0.703882E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.835	2344.952	6.211	516.731	1.000	1.000	0.980

W Kg/sec = 11.743 Wdry = 25.653 WH2O = 0.182 lbm/sec H2O = 3.571g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
61.034	2349.401	1.373	0.254	53.577	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49047.840	20214.797	2.841	509.668	179.424	384.739	2.144

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	230.95	-0.08	230.95	0.21	0.40	375.59
MEAN	15.91	0.00	-0.02	230.95	-0.08	230.95	0.21	0.36	
HUB	13.07	0.00	-0.02	230.95	-0.08	230.95	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.37	47.36	11.01	374.89	440.39	6.03	512.53	497.79	34.49
MEAN	54.66	44.80	9.86	325.64	399.29	6.03	512.53	497.79	34.49
HUB	49.20	38.84	10.36	267.46	353.43	6.03	512.53	497.79	34.49

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	311.45	194.27	243.43	1109.51	0.28	2.05	1.78	7.43
MEAN	15.50	310.33	190.10	245.29	1107.72	0.28	2.13	1.86	5.75
HUB	12.59	326.23	212.80	247.27	1105.95	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	367.12	298.56	172.85	0.27	3486.62	0.92	0.91		
MEAN	317.14	276.23	127.03	0.25	2947.42	0.92	0.91	0.91	1.60
HUB	257.64	251.30	44.83	0.23	2680.21	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.67	1.07	6.32	527.95	1.02	520.31	503.68	28.15
MEAN	6.60	1.06	6.26	526.21	1.02	518.63	503.02	29.56
HUB	6.56	1.06	6.19	525.35	1.02	516.97	503.00	31.03

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.59	35.38	31.50	3.88	0.93	0.48	1.40
MEAN	37.78	27.38	23.50	3.88	0.94	0.45	1.64
HUB	40.72	10.28	6.50	3.78	0.94	0.44	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	339.6358	193.5897	279.0619	1106.3871	0.3070	-0.1716	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.6056	6.1954	517.4189	503.7392	30.7550	34.7497	33.0000	-1.7497

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   285.4108    65.1738   277.8699  1109.2144     0.2573     0.1549     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6039     6.3113   520.0729   502.8109   410.5396     0.0248     0.3889

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   277.5981     0.0000   277.5981  1109.5278     0.2502     0.3120     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3234   520.3749   502.8428     0.0000     0.0600     0.0377     0.1889

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8837     6.5993     1.0626   526.4362     9.7747   230.1541     1.7841

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  62127.969       0.461      90.704  263474.906   0.743671E-02

Melt Ratio at Stator LE, Throat, TE
0.36385E+00 0.42808E+00 0.62166E+00
 trTOT =     1.1455   Tt4 =   526.4362   T1  =   459.5743

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    421321.91    615.1105     82.4237      1.5216      0.8344     15.7438      1.1455     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 34281 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.782   EfDer =  0.952    SH =  0.115948E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     27.752    2273.080       4.829     461.398       1.000       1.000       0.980
  W Kg/sec =  12.615  Wdry =  27.720  WH2O = 0.032  lbm/sec   H2O =   0.518g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     79.686    2410.064       1.380       0.249      53.386      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59800.316   21765.988       3.563     831.557     233.403     619.754       2.655

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   172.59    -0.06   172.59     0.17     0.43   433.87
 MEAN    17.06     0.00    -0.02   172.59    -0.06   172.59     0.17     0.36
 HUB     12.51     0.00    -0.02   172.59    -0.06   172.59     0.17     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.14    50.47    16.67   409.22   444.19     4.74   459.01   455.67    41.48
 MEAN    62.98    47.20    15.78   338.41   379.93     4.74   459.01   455.67    41.48
 HUB     55.19    38.62    16.57   248.15   302.32     4.74   459.01   455.67    41.48

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   366.42   283.35   232.32  1054.68      0.35     7.29     6.52    16.04
 MEAN    18.04   370.25   286.11   235.00  1051.98      0.35     7.43     6.80    12.53
 HUB     15.00   399.99   320.98   238.68  1048.66      0.38     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    409.22   264.23   125.87     0.25  5846.80      0.92     0.87
 MEAN   357.77   245.68    71.66     0.23  5161.34      0.92     0.87     0.87     1.78
 HUB    297.55   239.83    23.43     0.23  4815.39      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.47     1.13     5.04   480.00     1.04   469.23   470.52    37.76
 MEAN     5.39     1.12     4.96   477.81     1.04   466.82   469.33    41.39
 HUB      5.35     1.11     4.85   476.71     1.03   463.89   469.17    46.31

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.65    28.45    24.20     4.25     0.93     0.58     1.80
 MEAN    50.60    16.96    12.70     4.26     0.95     0.53     2.22
 HUB     53.36    -5.61    -9.30     3.69     0.95     0.40     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.952       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   380.8472   285.5565   251.9962  1051.6023     0.3622    -0.0356     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.4027     4.9409   466.5606   469.8948    43.1248    48.5724    35.4000   -13.1724

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   251.2235    61.4569   243.5904  1058.9452     0.2372     0.5198     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3916     5.1873   473.1205   468.6674   554.9116     0.0343     0.6112

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   250.1499     0.0000   250.1499  1058.9491     0.2362     0.4858     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.1653   473.1651   469.5557     0.0000     0.0600     0.0884     0.4717
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8106     5.3668     1.1115   478.1725    16.7773   166.4670     1.2904

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 104774.430       0.626     164.319  288774.406   0.201166E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.140   EfDer =  0.957    SH =  0.287067E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     27.752    2273.080       5.367     478.171       1.000       1.000       0.980
 W Kg/sec =  12.615  Wdry =  27.673  WH2O = 0.080  lbm/sec   H2O =   1.362g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     72.985    2367.449       1.378       0.250      53.441      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  56355.047   21751.289       2.759     590.487     213.998     468.502       2.189

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   229.04    -0.08   229.04     0.22     0.44   424.55
 MEAN    18.08     0.00    -0.02   229.04    -0.08   229.04     0.22     0.40
 HUB     15.21     0.00    -0.02   229.04    -0.08   229.04     0.22     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.67    46.36    14.31   407.64   467.64     5.20   473.99   472.01    57.02
 MEAN    57.44    42.30    15.14   358.61   425.58     5.20   473.99   472.01    57.02
 HUB     52.80    37.84    14.96   301.71   378.86     5.20   473.99   472.01    57.02

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   337.55   234.70   242.60  1071.11      0.32     2.33     2.04     9.02
 MEAN    18.01   337.07   231.75   244.75  1068.97      0.32     2.40     2.13     7.35
 HUB     15.22   357.01   257.63   247.14  1066.86      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    405.06   296.44   170.36     0.28  4794.21      0.92     0.88
 MEAN   357.25   275.05   125.50     0.26  4175.32      0.92     0.88     0.88     1.71
 HUB    301.97   251.09    44.34     0.24  3923.14      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.93     1.11     5.54   493.34     1.03   484.25   481.88    41.28
 MEAN     5.86     1.09     5.47   491.38     1.03   482.32   480.91    44.19
 HUB      5.83     1.09     5.40   490.58     1.03   480.42   480.88    47.25

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     44.05    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN    43.44    27.15    23.50     3.65     0.95     0.52     1.63
 HUB     46.19    10.17     6.50     3.67     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.957       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   360.2830   232.4051   275.3029  1067.9193     0.3374    -0.1068     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8666     5.4287   481.4219   481.6004    45.9654    40.1704    30.6000    -9.5704

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   267.1762    56.6433   261.1028  1073.0621     0.2490     0.3676     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8610     5.6174   486.0779   480.2752   491.5697     0.0238     0.4631

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   276.7996     0.0000   276.7996  1072.5780     0.2581     0.3541     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5838	485.6617	480.7816	0.0000	0.0600	0.0660	0.2836

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8306	5.8442	1.0889	491.7663	13.5964	188.5319	1.4615

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
85306.680	0.520	133.788	263068.844	0.325098E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.937 EfDer = 0.974 SH = 0.378154E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.752	2273.080	5.844	491.765	1.000	1.000	0.980

W Kg/sec = 12.615 Wdry = 27.647 WH2O = 0.105 lbm/sec H2O = 1.897g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
67.970	2334.498	1.377	0.251	53.471	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53275.930	21743.436	2.735	545.479	199.415	424.468	2.129

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	234.39	-0.08	234.39	0.22	0.43	408.86
MEAN	17.74	0.00	-0.02	234.39	-0.08	234.39	0.22	0.39	
HUB	15.05	0.00	-0.02	234.39	-0.08	234.39	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.52	46.36	13.16	398.12	462.06	5.66	487.40	481.64	46.25
MEAN	56.34	43.40	12.94	351.87	422.86	5.66	487.40	481.64	46.25
HUB	51.87	38.84	13.03	298.54	379.62	5.66	487.40	481.64	46.25

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	330.49	218.38	248.06	1084.62	0.30	2.26	1.98	8.75
MEAN	17.51	332.12	218.68	249.97	1082.81	0.31	2.34	2.07	6.78
HUB	14.85	354.26	248.91	252.08	1081.03	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	392.96	303.34	174.58	0.28	4327.63	0.92	0.89		
MEAN	347.27	281.10	128.59	0.26	3829.75	0.92	0.89	0.89	1.65
HUB	294.57	256.18	45.66	0.24	3697.50	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.39	1.09	6.00	505.42	1.03	496.73	490.01	35.66
MEAN	6.33	1.08	5.93	503.85	1.02	495.07	489.34	37.66
HUB	6.31	1.08	5.86	503.43	1.02	493.45	489.57	39.72

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.36	35.14	31.50	3.64	0.93	0.51	1.40
MEAN	41.18	27.22	23.50	3.72	0.94	0.49	1.62
HUB	44.64	10.27	6.50	3.77	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.974	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	356.7537	220.1141	280.7543	1081.7094	0.3298	-0.1160	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3374	5.8848	494.1178	490.0659	39.2174	38.0968	31.5000	-6.5968

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	277.0177	60.4295	270.3463	1086.0874	0.2551	0.3099	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3341	6.0584	498.1328	488.8917	451.3937	0.0181	0.4325

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	281.6188	0.0000	281.6188	1085.8478	0.2594	0.3350	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.0364	497.9297	489.3791	0.0000	0.0600	0.0511	0.2563

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8538	6.3205	1.0815	504.2287	12.4644	195.1978	1.5132

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
78451.195	0.508	123.036	262375.188	0.430210E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.144 EfDer = 0.986 SH = 0.500677E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.752	2273.080	6.321	504.228	1.000	1.000	0.980

W Kg/sec = 12.615 Wdry = 27.613 WH2O = 0.139 lbm/sec H2O = 2.648g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
63.639	2305.468	1.375	0.252	53.511	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50536.223	21732.834	2.747	513.330	186.849	395.845	2.119

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	236.26	-0.08	236.26	0.22	0.41	387.48
MEAN	16.97	0.00	-0.02	236.26	-0.08	236.26	0.22	0.38	
HUB	14.32	0.00	-0.02	236.26	-0.08	236.26	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.27	46.36	11.91	382.05	449.27	6.12	499.81	490.35	40.31
MEAN	54.94	43.80	11.14	336.64	411.34	6.12	499.81	490.35	40.31
HUB	50.26	37.84	12.42	284.06	369.53	6.12	499.81	490.35	40.31

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	318.77	198.88	249.13	1096.61	0.29	2.16	1.89	8.34
MEAN	16.57	320.55	199.57	250.85	1094.99	0.29	2.24	1.97	6.35
HUB	13.89	341.58	229.79	252.74	1093.40	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	374.51	304.81	175.63	0.28	3756.42	0.92	0.90		
MEAN	328.77	282.16	129.19	0.26	3309.07	0.92	0.90	0.90	1.60
HUB	275.53	256.84	45.74	0.23	3192.88	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.82	1.08	6.44	516.03	1.02	507.98	497.27	32.84
MEAN	6.76	1.07	6.38	514.63	1.02	506.49	496.72	34.40
HUB	6.75	1.07	6.31	514.26	1.02	505.02	496.97	35.99

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.60	35.18	31.50	3.68	0.93	0.48	1.40
MEAN	38.51	27.25	23.50	3.75	0.94	0.46	1.62
HUB	42.28	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.986	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	340.4505	200.6946	275.0059	1094.1946	0.3111	-0.0929	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7734	6.3412	505.7999	497.3428	35.4629	36.1213	32.4000	-3.7213

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	276.7628	62.0698	269.7127	1097.5449	0.2522	0.2665	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7719	6.4840	508.9110	496.4155	432.2457	0.0138	0.4062

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	274.5355	0.0000	274.5355	1097.6326	0.2501	0.3166	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.4780	509.0078	496.8144	0.0000	0.0600	0.0413	0.2515

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8688	6.7609	1.0697	514.9697	10.7446	211.8723	1.6424

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
67896.039	0.484	106.482	269401.000	0.565253E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.12626E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.501 EfDer = 0.994 SH = 0.638895E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.752	2273.080	6.761	514.964	1.000	1.000	0.980

W Kg/sec = 12.615 Wdry = 27.575 WH2O = 0.177 lbm/sec H2O = 3.544g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
60.124	2281.298	1.373	0.253	53.556	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
48180.926	21720.826	2.885	509.668	176.681	384.739	2.178

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	226.87	-0.08	226.87	0.21	0.39	364.71
MEAN	15.91	0.00	-0.02	226.87	-0.08	226.87	0.21	0.35	
HUB	13.07	0.00	-0.02	226.87	-0.08	226.87	0.21	0.31	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.03	47.36	10.67	363.40	428.47	6.57	510.90	497.58	36.23
MEAN	54.30	44.80	9.50	315.66	388.79	6.57	510.90	497.58	36.23
HUB	48.82	38.84	9.98	259.26	344.57	6.57	510.90	497.58	36.23

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	303.19	185.71	239.66	1107.27	0.27	2.05	1.78	7.43
MEAN	15.50	302.53	182.40	241.35	1105.61	0.27	2.13	1.86	5.75
HUB	12.59	318.49	205.69	243.16	1103.98	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	355.86	293.92	170.15	0.27	3333.06	0.92	0.91		
MEAN	307.42	271.81	125.01	0.25	2828.04	0.92	0.91	0.91	1.58
HUB	249.74	247.11	44.05	0.22	2590.67	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.23	1.07	6.87	525.38	1.02	518.13	503.23	29.99
MEAN	7.16	1.06	6.80	523.80	1.02	516.58	502.61	31.40
HUB	7.12	1.05	6.73	523.06	1.02	515.06	502.60	32.83

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.77	35.37	31.50	3.87	0.93	0.47	1.40
MEAN	37.08	27.38	23.50	3.88	0.94	0.44	1.64
HUB	40.23	10.27	6.50	3.77	0.94	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	331.4517	185.7468	274.5147	1104.3260	0.3001	-0.1741	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.1626	6.7365	515.4092	503.2902	32.6339	34.0837	33.0000	-1.0837

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   281.0726    64.1832   273.6463  1106.9103     0.2539     0.1396     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.1612     6.8518   517.8300   502.4684   410.5396     0.0238     0.3779

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   273.3932     0.0000   273.3932  1107.2169     0.2469     0.3006     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.8646   518.1254   502.5046     0.0000     0.0600     0.0370     0.1741

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8850     7.1563     1.0585   524.0159     9.1155   233.3453     1.8089

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57826.457       0.457      90.690  283444.344   0.675103E-02

Melt Ratio at Stator LE, Throat, TE
0.33659E+00 0.39685E+00 0.57870E+00
 trTOT =     1.1357   Tt4 =   524.0159   T1  =   461.3977

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    394254.81    618.3150     79.6861      1.4821      0.8360     15.7821      1.1357     37.3740
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*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 30029 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =14.279   EfDer =  0.964    SH =  0.151938E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     31.772    2152.985       5.592     471.068       1.000       1.000       0.980
  W Kg/sec =  14.442  Wdry =  31.724  WH2O = 0.048  lbm/sec   H2O =   0.770g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     79.592    2259.188       1.380       0.249      53.398      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60363.965   24915.389       3.566     831.557     233.187     619.754       2.658

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   174.22    -0.06   174.22     0.17     0.40   406.71
 MEAN    17.06     0.00    -0.02   174.22    -0.06   174.22     0.17     0.35
 HUB     12.51     0.00    -0.02   174.22    -0.06   174.22     0.17     0.28

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.80    50.47    15.33   387.60   425.01     5.49   468.64   463.98    40.41
 MEAN    61.48    47.20    14.28   320.53   364.87     5.49   468.64   463.98    40.41
 HUB     53.46    38.62    14.84   235.04   292.62     5.49   468.64   463.98    40.41

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   351.27   260.39   235.78  1063.66      0.33     7.29     6.52    16.04
 MEAN    18.04   357.51   266.67   238.12  1061.38      0.34     7.43     6.80    12.53
 HUB     15.00   389.63   305.81   241.43  1058.48      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    387.60   267.91   127.22     0.25  5373.01      0.92     0.88
 MEAN   338.87   248.82    72.19     0.23  4810.74      0.92     0.88     0.88     1.68
 HUB    281.83   242.62    23.99     0.23  4587.93      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.23     1.11     5.79   487.23     1.03   477.35   476.82    38.24
 MEAN     6.16     1.10     5.70   485.54     1.03   475.31   475.99    41.20
 HUB      6.14     1.10     5.59   484.87     1.03   472.72   476.15    45.28

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     47.84    28.35    24.20     4.15     0.93     0.54     1.80
 MEAN    48.24    16.87    12.70     4.17     0.95     0.49     2.22
 HUB     51.71    -5.67    -9.30     3.63     0.95     0.36     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.964       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   368.8559   266.1548   255.3749  1060.9534     0.3477    -0.0410     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.1724     5.6842   475.0045   476.5662    42.8902    46.1841    35.4000   -10.7841

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   255.8424    62.5869   248.0690  1067.2180     0.2397     0.4789     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.1641     5.9258   480.6488   475.4209   554.9116     0.0272     0.5681

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   254.4767     0.0000   254.4767  1067.2439     0.2384     0.4566     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.9071   480.7059   476.2749     0.0000     0.0600     0.0731     0.4402
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8290     6.1419     1.0983   485.8803    14.8144   173.7089     1.3466

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  92657.633       0.617     166.366  325500.219   0.245036E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =13.258   EfDer =  0.972    SH =  0.336636E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.772    2152.985       6.142     485.879       1.000       1.000       0.980
 W Kg/sec =  14.442  Wdry =  31.666  WH2O = 0.107  lbm/sec   H2O =   1.797g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.599    2224.510       1.377       0.251      53.457      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57327.094   24897.201       2.735     590.487     215.869     468.502       2.170

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   232.99    -0.08   232.99     0.22     0.42   398.92
 MEAN    18.08     0.00    -0.02   232.99    -0.08   232.99     0.22     0.39
 HUB     15.21     0.00    -0.02   232.99    -0.08   232.99     0.22     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.90     46.36    12.54   386.10   451.02     5.94   481.56   478.70    55.21
 MEAN    55.56     42.30    13.26   339.66   411.96     5.94   481.56   478.70    55.21
 HUB     50.82     37.84    12.98   285.77   368.77     5.94   481.56   478.70    55.21

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   324.93   209.77   248.15  1077.64      0.30     2.33     2.04     9.02
 MEAN    18.01   326.80   210.50   249.97  1075.91      0.30     2.40     2.13     7.35
 HUB     15.22   348.72   241.03   252.01  1074.21      0.32     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    383.66   303.01   173.89     0.28  4285.08      0.92     0.89
 MEAN   338.38   280.78   127.88     0.26  3792.56      0.92     0.89     0.89     1.61
 HUB    286.01   255.99    44.98     0.24  3670.45      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.68     1.09     6.28   498.70     1.03   490.29   486.93    42.57
 MEAN     6.62     1.08     6.22   497.22     1.02   488.72   486.26    44.91
 HUB      6.60     1.08     6.15   496.86     1.02   487.18   486.48    47.32

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     40.21    35.02    31.50     3.52     0.93     0.49     1.40
 MEAN    40.10    27.09    23.50     3.59     0.94     0.48     1.63
 HUB     43.72    10.12     6.50     3.62     0.94     0.47     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.972       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   351.6497   211.0917   281.2434  1074.8002     0.3272    -0.1203     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6324     6.1658   487.7545   486.9660    46.7485    36.8906    30.6000    -6.2906

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   274.0596    58.1026   267.8297  1079.0419     0.2540     0.3032     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6293     6.3430   491.6172   485.8077   491.5697     0.0175     0.4085

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   283.7090     0.0000   283.7090  1078.5541     0.2630     0.3088     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.3099	491.1900	486.3009	0.0000	0.0600	0.0498	0.2246

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8517	6.6156	1.0771	497.5924	11.7144	201.1380	1.5592

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
73624.445	0.500	132.192	297779.000	0.375139E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =10.831 EfDer = 0.987 SH = 0.426794E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.772	2152.985	6.616	497.591	1.000	1.000	0.980

W Kg/sec = 14.442 Wdry = 31.637 WH2O = 0.136 lbm/sec H2O = 2.393g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.147	2198.175	1.376	0.252	53.487	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54584.070	24888.287	2.688	545.479	202.935	424.468	2.092

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	240.15	-0.08	240.15	0.22	0.41	384.99
MEAN	17.74	0.00	-0.02	240.15	-0.08	240.15	0.22	0.38	
HUB	15.05	0.00	-0.02	240.15	-0.08	240.15	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.51	46.36	11.15	377.08	447.13	6.40	493.01	487.00	46.97
MEAN	54.23	43.40	10.83	333.28	410.85	6.40	493.01	487.00	46.97
HUB	49.67	38.84	10.83	282.76	371.05	6.40	493.01	487.00	46.97

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	319.94	192.45	255.59	1088.99	0.29	2.26	1.98	8.75
MEAN	17.51	323.78	196.72	257.16	1087.58	0.30	2.34	2.07	6.78
HUB	14.85	347.74	232.13	258.91	1086.20	0.32	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	372.20	312.46	179.74	0.29	3814.17	0.92	0.90		
MEAN	328.92	289.15	132.20	0.27	3445.41	0.92	0.90	0.90	1.55
HUB	279.01	263.12	46.87	0.24	3448.43	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.13	1.08	6.72	508.97	1.02	500.84	493.98	38.11
MEAN	7.08	1.07	6.66	507.87	1.02	499.55	493.57	39.73
HUB	7.08	1.07	6.60	507.88	1.02	498.28	494.02	41.36

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.98	35.12	31.50	3.62	0.93	0.45	1.40
MEAN	37.42	27.21	23.50	3.71	0.94	0.44	1.62
HUB	41.88	10.26	6.50	3.76	0.94	0.45	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.987	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	350.2697	198.0137	288.9281	1086.4006	0.3224	-0.1306	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.0915	6.6067	498.5056	494.3221	41.4086	34.4244	31.5000	-2.9244

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	286.2234	62.4377	279.3303	1089.9119	0.2626	0.2335	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.0899	6.7635	501.7396	493.3299	451.3937	0.0137	0.3731

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	290.8223	0.0000	290.8223	1089.6686	0.2669	0.2800	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7425	501.5302	493.7805	0.0000	0.0600	0.0395	0.1850

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8709	7.0787	1.0700	508.2373	10.6466	210.3809	1.6309

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
67114.469	0.484	120.504	298089.844	0.475961E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.803 EfDer = 0.996 SH = 0.540735E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.772	2152.985	7.079	508.236	1.000	1.000	0.980

W Kg/sec = 14.442 Wdry = 31.601 WH2O = 0.172 lbm/sec H2O = 3.173g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.312	2175.033	1.374	0.253	53.524	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52153.141	24876.984	2.676	513.330	191.812	395.845	2.064

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	243.82	-0.08	243.82	0.22	0.40	365.56
MEAN	16.97	0.00	-0.02	243.82	-0.08	243.82	0.22	0.37	
HUB	14.32	0.00	-0.02	243.82	-0.08	243.82	0.22	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	56.03	46.36	9.67	361.86	436.41	6.84	503.53	494.52	42.15
MEAN	52.60	43.80	8.80	318.85	401.46	6.84	503.53	494.52	42.15
HUB	47.82	37.84	9.98	269.05	363.16	6.84	503.53	494.52	42.15

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	310.73	172.38	258.53	1098.99	0.28	2.16	1.89	8.34
MEAN	16.57	314.72	177.45	259.92	1097.78	0.29	2.24	1.97	6.35
HUB	13.89	337.57	213.55	261.44	1096.58	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	354.72	316.37	182.34	0.29	3256.22	0.92	0.91		
MEAN	311.40	292.40	133.94	0.27	2942.54	0.92	0.91	0.91	1.50
HUB	260.97	265.71	47.42	0.24	2967.42	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.54	1.07	7.14	517.91	1.02	510.27	500.21	35.64
MEAN	7.49	1.06	7.09	516.98	1.02	509.15	499.89	36.89
HUB	7.50	1.06	7.03	517.06	1.02	508.04	500.36	38.14

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.69	35.19	31.50	3.69	0.93	0.41	1.40
MEAN	34.32	27.26	23.50	3.76	0.93	0.41	1.62
HUB	39.24	10.28	6.50	3.78	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.996	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	336.2926	178.4528	285.0392	1096.9000	0.3066	-0.1055	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.5068	7.0413	508.3733	500.5258	38.0383	32.0492	32.4000	0.3508

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	287.9493	64.5786	280.6144	1099.4586	0.2619	0.1806	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.5060     7.1622   510.7544   499.7578   432.2457     0.0120     0.3423

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   285.5165     0.0000   285.5165  1099.5459     0.2597     0.2512     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.1583   510.8465   499.9602     0.0000     0.0600     0.0366     0.1714

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8810     7.4955     1.0589   517.2882     9.0799   231.0998     1.7915

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57442.270       0.457     103.137  307088.094   0.587633E-02

Melt Ratio at Stator LE, Throat, TE
0.63589E-01 0.96630E-01 0.21029E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.958   EfDer =  1.000    SH =  0.630604E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.772    2152.985       7.496     517.277       1.000       1.000       0.980
 W Kg/sec =  14.442  Wdry =  31.572  WH2O = 0.200  lbm/sec   H2O =   3.855g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.227    2155.921       1.373       0.253      53.553      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50054.371   24868.045       2.787     509.668     182.855     384.739       2.104

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   235.70    -0.08   235.70     0.21     0.38   344.66
 MEAN    15.91     0.00    -0.02   235.70    -0.08   235.70     0.21     0.35
 HUB     13.07     0.00    -0.02   235.70    -0.08   235.70     0.21     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.60    47.36     8.24   344.20   417.23     7.26   512.89   500.07    36.76
 MEAN    51.76    44.80     6.96   298.98   380.77     7.26   512.89   500.07    36.76
 HUB     46.18    38.84     7.34   245.56   340.43     7.26   512.89   500.07    36.76

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   296.63   159.11   250.34  1107.96     0.27     2.05     1.78     7.43
 MEAN    15.50   298.57   160.58   251.71  1106.71     0.27     2.13     1.86     5.75
 HUB     12.59   316.80   190.43   253.18  1105.47     0.29     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    337.06   307.15   177.96     0.28  2855.87     0.92     0.91
 MEAN   291.17   283.57   130.60     0.26  2489.86     0.92     0.91     0.91     1.48
 HUB    236.55   257.35    46.12     0.23  2398.55     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.92     1.06     7.54   525.72     1.02   518.78   504.62    31.36
 MEAN     7.86     1.05     7.48   524.64     1.01   517.61   504.22    32.46
 HUB      7.85     1.05     7.42   524.37     1.01   516.45   504.44    33.57

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.44    35.41    31.50     3.91     0.93     0.40     1.40
 MEAN    32.54    27.42    23.50     3.92     0.93     0.38     1.64
 HUB     36.95    10.32     6.50     3.82     0.93     0.38     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   329.8200   163.5220   286.4294  1105.3082     0.2984    -0.1930     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.8666     7.4038   516.3187   504.9152    33.7744    29.7220    33.0000     3.2780
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   294.3572    67.2167   286.5800  1107.1569     0.2659     0.0338     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.8644     7.4927   518.0502   504.3112   410.5396     0.0258     0.3114

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   286.2619     0.0000   286.2619  1107.4985     0.2585     0.2260     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.5084   518.3757   504.2630     0.0000     0.0600     0.0403     0.0735

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8851     7.8586     1.0484   524.8370     7.6335   257.4180     1.9955

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  48405.250       0.426      86.911  323915.125   0.651831E-02

Melt Ratio at Stator LE, Throat, TE
0.59726E+00 0.65563E+00 0.82656E+00
 trTOT =     1.1141   Tt4 =   524.8370   T1  =   471.0680

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    339244.06    609.1102     79.5915      1.4053      0.8525     14.2790      1.1141     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 25666 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.451   EfDer =  0.994    SH =  0.192363E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     40.047    1974.130       6.513     481.862       1.000       1.000       0.980
  W Kg/sec =  18.203  Wdry =  39.969  WH2O = 0.077  lbm/sec   H2O =   1.107g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     87.119    2048.185       1.379       0.250      53.411      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  67030.797   31398.697       3.257     831.557     255.316     619.754       2.427

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   193.46    -0.07   193.46     0.18     0.38   368.73
 MEAN    17.06     0.00    -0.02   193.46    -0.07   193.46     0.18     0.33
 HUB     12.51     0.00    -0.02   193.46    -0.07   193.46     0.18     0.27

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     61.44    50.47    10.97   355.40   404.71     6.37   478.87   472.84    37.88
 MEAN    56.65    47.20     9.45   293.90   351.92     6.37   478.87   472.84    37.88
 HUB     48.10    38.62     9.48   215.52   289.66     6.37   478.87   472.84    37.88

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   339.75   213.24   264.50  1071.76      0.32     7.29     6.52    16.04
 MEAN    18.04   352.17   230.39   266.35  1070.25      0.33     7.43     6.80    12.53
 HUB     15.00   392.57   285.51   269.43  1067.98      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    355.40   300.29   142.17     0.28  4400.48      0.92     0.91
 MEAN   310.72   278.20    80.32     0.26  4156.51      0.92     0.91     0.91     1.43
 HUB    258.41   270.79    27.10     0.25  4283.56      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.07     1.09     6.60   493.98     1.03   484.75   482.79    38.95
 MEAN     7.04     1.08     6.54   493.31     1.02   483.40   482.62    40.82
 HUB      7.06     1.08     6.44   493.66     1.02   481.34   483.51    43.82

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.88    28.26    24.20     4.06     0.93     0.40     1.80
 MEAN    40.86    16.78    12.70     4.08     0.94     0.36     2.22
 HUB     46.66    -5.74    -9.30     3.56     0.94     0.24     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   366.9145   229.9455   285.9219  1069.6212     0.3430    -0.0586     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.0506     6.5072   482.9061   483.2718    42.6985    38.8071    35.4000    -3.4071

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   288.7137    70.6282   279.9415  1074.1272     0.2688     0.3437     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.0480     6.7079   486.9994   482.3972   554.9116     0.0149     0.4429

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   286.6344     0.0000   286.6344  1074.2074     0.2668     0.3545     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.6998   487.0965   483.1444     0.0000     0.0600     0.0406     0.3284
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8723     7.0344     1.0801   493.6512    11.7905   198.9560     1.5423

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  73860.477       0.585     167.151  404530.969   0.287244E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.626   EfDer =  0.999    SH =  0.374473E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     40.047    1974.130       7.034     493.650       1.000       1.000       0.980
 W Kg/sec =  18.203  Wdry =  39.897  WH2O = 0.150  lbm/sec   H2O =   2.240g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     81.641    2023.596       1.377       0.251      53.470      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64489.066   31376.070       2.465     590.487     239.519     468.502       1.956

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   262.10    -0.09   262.10     0.24     0.41   362.89
 MEAN    18.08     0.00    -0.02   262.10    -0.09   262.10     0.24     0.38
 HUB     15.21     0.00    -0.02   262.10    -0.09   262.10     0.24     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.49    46.36     7.13   354.03   440.56     6.75   488.19   485.27    52.93
 MEAN    49.93    42.30     7.63   311.44   407.12     6.75   488.19   485.27    52.93
 HUB     45.00    37.84     7.16   262.03   370.68     6.75   488.19   485.27    52.93

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   321.47   153.93   282.22  1081.66      0.30     2.33     2.04     9.02
 MEAN    18.01   327.97   165.14   283.36  1080.78      0.30     2.40     2.13     7.35
 HUB     15.22   354.47   211.23   284.66  1079.93      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    351.79   344.67   197.85     0.32  3145.14      0.92     0.91
 MEAN   310.27   318.36   145.12     0.29  2975.88      0.92     0.91     0.91     1.39
 HUB    262.25   289.20    51.03     0.27  3216.88      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.45     1.06     7.02   502.27     1.02   494.05   490.85    45.17
 MEAN     7.43     1.06     6.98   501.80     1.02   493.25   490.75    46.37
 HUB      7.46     1.06     6.93   502.46     1.02   492.47   491.57    47.55

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.61    35.03    31.50     3.53     0.93     0.34     1.40
 MEAN    30.23    27.12    23.50     3.62     0.93     0.34     1.63
 HUB     36.58    10.16     6.50     3.66     0.93     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   359.8239   165.6081   319.4483  1079.2552     0.3334    -0.1617     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.4443     6.9015   491.8878   491.6295    48.8411    27.4031    30.6000     3.1969

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   313.6006    66.4856   306.4719  1081.9622     0.2898     0.1072     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4422     7.0273   494.3616   490.8492   491.5697     0.0143     0.2626

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   324.7405     0.0000   324.7405  1081.3324     0.3003     0.1568     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9866	493.7977	491.3361	0.0000	0.0600	0.0401	0.0210

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8725	7.4300	1.0562	502.1758	8.5263	247.9996	1.9225

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
53654.996	0.434	121.425	373131.375	0.408623E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.729 EfDer = 0.996 SH = 0.450858E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
40.047	1974.130	7.430	502.175	1.000	1.000	0.980

W Kg/sec = 18.203 Wdry = 39.866 WH2O = 0.181 lbm/sec H2O = 2.792g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
77.958	2006.347	1.376	0.252	53.495	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62275.813	31366.539	2.384	545.479	228.831	424.468	1.855

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	273.99	-0.09	273.99	0.25	0.41	351.39
MEAN	17.74	0.00	-0.02	273.99	-0.09	273.99	0.25	0.38	
HUB	15.05	0.00	-0.02	273.99	-0.09	273.99	0.25	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.61	46.36	5.25	345.76	441.23	7.11	496.22	491.56	48.56
MEAN	48.13	43.40	4.73	305.59	410.51	7.11	496.22	491.56	48.56
HUB	43.43	38.84	4.59	259.27	377.29	7.11	496.22	491.56	48.56

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	323.86	132.86	295.36	1089.16	0.30	2.26	1.98	8.75
MEAN	17.51	331.31	148.69	296.07	1088.65	0.30	2.34	2.07	6.78
HUB	14.85	358.82	201.38	296.98	1088.16	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	341.28	361.48	208.41	0.33	2633.92	0.92	0.91		
MEAN	301.59	333.23	152.90	0.31	2604.73	0.92	0.91	0.91	1.33
HUB	255.83	301.93	54.44	0.28	2991.97	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.79	1.05	7.34	509.37	1.01	501.05	496.14	43.11
MEAN	7.79	1.05	7.31	509.29	1.01	500.59	496.25	43.75
HUB	7.84	1.06	7.28	510.35	1.02	500.14	497.27	44.35

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	24.22	35.21	31.50	3.71	0.93	0.29	1.40
MEAN	26.67	27.31	23.50	3.81	0.92	0.30	1.62
HUB	34.14	10.39	6.50	3.89	0.92	0.34	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.996	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	365.5093	149.6660	333.4624	1086.9764	0.3363	-0.1743	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8021	7.2243	499.0821	497.2089	46.2178	24.1717	31.5000	7.3283

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	332.9951	72.6406	324.9755	1088.9326	0.3058	0.0123	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.7973	7.3158	500.8831	496.6234	451.3937	0.0196	0.2205

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	338.7316	0.0000	338.7316	1088.5917	0.3112	0.1021	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.2833	500.5788	497.0091	0.0000	0.0600	0.0544	-0.0530

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8463	7.7800	1.0471	509.6720	7.4973	267.8968	2.0767

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
47295.367	0.406	107.032	375883.313	0.489448E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 2.162 EfDer = 0.978 SH = 0.536871E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
40.047	1974.130	7.780	509.671	1.000	1.000	0.980

W Kg/sec = 18.203 Wdry = 39.832 WH2O = 0.215 lbm/sec H2O = 3.423g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
75.005	1991.538	1.374	0.253	53.522	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60489.992	31355.785	2.330	513.330	220.278	395.845	1.797

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	282.80	-0.10	282.80	0.26	0.40	334.72
MEAN	16.97	0.00	-0.02	282.80	-0.10	282.80	0.26	0.37	
HUB	14.32	0.00	-0.02	282.80	-0.10	282.80	0.26	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.57	46.36	3.21	331.80	436.04	7.43	503.34	497.08	45.79
MEAN	45.96	43.80	2.16	292.36	406.83	7.43	503.34	497.08	45.79
HUB	41.11	37.84	3.27	246.70	375.35	7.43	503.34	497.08	45.79

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	323.26	109.59	304.12	1095.50	0.30	2.16	1.89	8.34
MEAN	16.57	330.12	127.46	304.53	1095.25	0.30	2.24	1.97	6.35
HUB	13.89	355.78	182.92	305.15	1095.00	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	325.26	372.83	215.67	0.34	2070.90	0.92	0.89		
MEAN	285.53	343.11	158.07	0.31	2114.11	0.92	0.89	0.89	1.27
HUB	239.29	310.31	56.37	0.28	2542.21	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.07	1.04	7.60	515.31	1.01	507.05	500.62	41.99
MEAN	8.07	1.04	7.59	515.43	1.01	506.81	500.80	42.29
HUB	8.13	1.05	7.57	516.60	1.01	506.58	501.82	42.55

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	19.82	35.34	31.50	3.84	0.93	0.23	1.40
MEAN	22.71	27.43	23.50	3.93	0.91	0.25	1.62
HUB	30.94	10.47	6.50	3.97	0.91	0.30	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.978	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	358.4243	128.1736	334.7230	1093.9291	0.3276	-0.1424	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0857	7.5162	505.6196	501.6103	44.0901	20.9531	32.4000	11.4469

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	340.9760	76.4709	332.2903	1094.9659	0.3114	-0.0510	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.0771	7.5606	506.5820	501.2886	432.2457	0.0271	0.1841

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	338.6637	0.0000	338.6637	1095.0823	0.3093	0.0489	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.5441	506.6959	501.3982	0.0000	0.0600	0.0772	-0.0837

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7857	8.0518	1.0349	515.7623	6.1091	307.2551	2.3818

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
38638.281	0.365	87.441	389545.188	0.570404E-02

Melt Ratio at Stator LE, Throat, TE
0.79800E-01 0.10063E+00 0.16880E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-0.212 EfDer = 0.947 SH = 0.602277E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
40.047	1974.130	8.052	515.754	1.000	1.000	0.980

W Kg/sec = 18.203 Wdry = 39.805 WH2O = 0.241 lbm/sec H2O = 3.932g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.905	1979.745	1.374	0.253	53.544	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
59083.375	31347.584	2.379	509.668	214.200	384.739	1.796

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	278.21	-0.10	278.21	0.25	0.38	316.50
MEAN	15.91	0.00	-0.02	278.21	-0.10	278.21	0.25	0.36	
HUB	13.07	0.00	-0.02	278.21	-0.10	278.21	0.25	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	48.61	47.36	1.25	315.61	420.80	7.71	509.64	500.95	42.00
MEAN	44.59	44.80	-0.21	274.14	390.65	7.71	509.64	500.95	42.00
HUB	39.00	38.84	0.16	225.16	357.97	7.71	509.64	500.95	42.00

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	314.37	94.37	299.87	1101.32	0.29	2.05	1.78	7.43
MEAN	15.50	319.69	109.75	300.26	1101.06	0.29	2.13	1.86	5.75
HUB	12.59	341.20	160.90	300.88	1100.80	0.31	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	309.06	368.80	214.69	0.33	1694.75	0.92	0.87		
MEAN	266.99	338.94	157.23	0.31	1702.43	0.92	0.87	0.87	1.25
HUB	216.89	306.05	56.00	0.28	2026.95	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.28	1.03	7.84	520.35	1.01	512.55	503.66	38.93
MEAN	8.28	1.03	7.82	520.37	1.01	512.30	503.77	39.21
HUB	8.33	1.03	7.80	521.26	1.01	512.06	504.55	39.46

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	17.47	35.60	31.50	4.10	0.93	0.20	1.40
MEAN	20.08	27.64	23.50	4.14	0.90	0.22	1.64
HUB	28.14	10.54	6.50	4.04	0.90	0.25	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.947	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	360.6823	111.7651	342.9289	1098.9733	0.3282	-0.2460	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2888	7.7034	510.3825	504.7577	41.5887	18.0515	33.0000	14.9485

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   356.0479    81.3038   346.6407  1099.2467     0.3239    -0.2604     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.2646     7.6945   510.6373   504.6336   410.5396     0.0705     0.1519

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   346.3244     0.0000   346.3244  1099.7977     0.3149     0.0147     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.7120   511.1516   504.4967     0.0000     0.0600     0.1002    -0.2239

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.7047     8.2503     1.0247   520.6173     4.9050   357.5424     2.7716

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  31076.934       0.325      70.329  412843.719   0.620459E-02

Melt Ratio at Stator LE, Throat, TE
0.46202E+00 0.49682E+00 0.60378E+00
 trTOT =     1.0804   Tt4 =   520.6173   T1  =   481.8623

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    244526.06    553.3781     87.1193      1.2668      0.8287      9.4513      1.0804     37.3740
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*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 20047 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.837   EfDer =  0.999    SH =  0.268347E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     49.466    1806.825       7.939     496.979       1.000       1.000       0.980
  W Kg/sec =  22.484  Wdry =  49.333  WH2O = 0.133  lbm/sec   H2O =   1.822g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     89.651    1845.881       1.378       0.250      53.435      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  70157.461   38772.156       3.163     831.557     262.871     619.754       2.358

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   202.49    -0.07   202.49     0.19     0.35   332.31
 MEAN    17.06     0.00    -0.02   202.49    -0.07   202.49     0.19     0.31
 HUB     12.51     0.00    -0.02   202.49    -0.07   202.49     0.19     0.26

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.10     50.47     7.63   325.28   383.22     7.75   493.71   484.83    34.80
 MEAN    53.04     47.20     5.84   269.00   336.74     7.75   493.71   484.83    34.80
 HUB     44.26     38.62     5.64   197.25   282.73     7.75   493.71   484.83    34.80

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.78   174.75   279.67  1085.43      0.30     7.29     6.52    16.04
 MEAN    18.04   344.47   199.43   280.88  1084.55      0.32     7.43     6.80    12.53
 HUB     15.00   387.86   264.77   283.44  1082.81      0.36     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    325.28   317.61   150.53     0.29  3606.63      0.92     0.91
 MEAN   284.38   293.44    84.96     0.27  3598.07      0.92     0.91     0.91     1.28
 HUB    236.51   284.84    28.26     0.26  3972.40      0.92     0.91

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP       8.43     1.06     7.92   506.05     1.02   497.38   492.71    38.05
 MEAN      8.43     1.06     7.87   506.03     1.02   496.56   492.94    39.05
 HUB       8.48     1.07     7.77   506.97     1.02   494.97   494.19    41.08

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      32.00    28.29    24.20     4.09     0.93     0.30     1.80
 MEAN     35.38    16.83    12.70     4.13     0.92     0.27     2.22
 HUB      43.05    -5.69    -9.30     3.61     0.92     0.16     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   361.4378   199.0403   301.6956  1083.7706     0.3335    -0.0729     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     8.4437     7.8274   495.9501   493.6543    40.9327    33.4144    35.4000     1.9856

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   306.6828    75.0240   297.3646  1086.9313     0.2822     0.2355     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     8.4415     7.9945   498.8634   493.0194   554.9116     0.0136     0.3547

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   304.3904     0.0000   304.3904  1087.0327     0.2800     0.2596     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     7.9874   498.9769   493.7507     0.0000     0.0600     0.0380     0.2234
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8723     8.4270     1.0615   506.3469     9.3690   220.8637     1.7121

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  58863.012       0.556     164.542  488925.938   0.381195E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.408   EfDer =  0.989    SH =  0.481615E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.466    1806.825       8.427     506.346       1.000       1.000       0.980
 W Kg/sec =  22.484  Wdry =  49.227  WH2O = 0.238  lbm/sec   H2O =   3.352g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     85.254    1828.732       1.375       0.252      53.505      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68447.930   38739.328       2.359     590.487     250.287     468.502       1.872

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   278.18    -0.10   278.18     0.26     0.39   327.94
 MEAN    18.08     0.00    -0.02   278.18    -0.10   278.18     0.26     0.37
 HUB     15.21     0.00    -0.02   278.18    -0.10   278.18     0.26     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.36    46.36     3.00   324.02   427.13     8.06   500.21   495.87    50.26
 MEAN    45.71    42.30     3.41   285.05   398.36     8.06   500.21   495.87    50.26
 HUB     40.78    37.84     2.94   239.82   367.35     8.06   500.21   495.87    50.26

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950      77.000

        R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   322.01   108.83   303.06  1091.94     0.29     2.33     2.04     9.02
 MEAN    18.01   329.25   127.94   303.37  1091.76     0.30     2.40     2.13     7.35
 HUB     15.22   355.75   184.96   303.89  1091.58     0.33     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    321.97   370.51   213.14     0.34  2224.28     0.92     0.90
 MEAN   283.97   341.14   156.03     0.31  2306.01     0.92     0.90     0.90     1.26
 HUB    240.03   308.84    55.07     0.28  2817.07     0.92     0.90

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.74     1.04     8.23   511.90     1.01   503.69   499.58    46.50
 MEAN     8.75     1.04     8.22   512.11     1.01   503.52   499.81    46.73
 HUB      8.82     1.05     8.21   513.38     1.01   503.36   500.92    46.93

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     19.75    35.12    31.50     3.62     0.93     0.22     1.40
 MEAN    22.87    27.22    23.50     3.72     0.92     0.24     1.63
 HUB     31.33    10.27     6.50     3.77     0.92     0.29     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.989       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   365.7334   128.3040   342.4894  1089.9368     0.3356    -0.1922     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.7642     8.1180   501.8705   500.8277    49.4956    20.5370    30.6000    10.0630

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   338.1901    71.6987   330.5024  1091.5999     0.3098    -0.0361     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     8.7562     8.2017   503.4055   500.2984   491.5697     0.0247     0.1666

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   350.8033     0.0000   350.8033  1090.8401     0.3216     0.0315     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1383	502.7134	500.7732	0.0000	0.0600	0.0688	-0.1518

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8067	8.7320	1.0362	512.4567	6.1186	299.1448	2.3190

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
38636.926	0.373	108.004	453813.656	0.515886E-02

Melt Ratio at Stator LE, Throat, TE
0.19685E-01 0.27586E-01 0.61783E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 0.050 EfDer = 0.951 SH = 0.548420E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.466	1806.825	8.732	512.452	1.000	1.000	0.980

W Kg/sec = 22.484 Wdry = 49.194 WH2O = 0.271 lbm/sec H2O = 3.892g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
82.771	1817.798	1.374	0.253	53.526	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
67130.945	38729.004	2.244	545.479	243.110	424.468	1.746

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	295.36	-0.10	295.36	0.27	0.40	318.37
MEAN	17.74	0.00	-0.02	295.36	-0.10	295.36	0.27	0.37	
HUB	15.05	0.00	-0.02	295.36	-0.10	295.36	0.27	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	46.98	46.36	0.62	316.45	432.95	8.31	505.55	500.43	48.07
MEAN	43.45	43.40	0.05	279.69	406.84	8.31	505.55	500.43	48.07
HUB	38.79	38.84	-0.05	237.30	378.94	8.31	505.55	500.43	48.07

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	333.30	83.72	322.61	1096.27	0.30	2.26	1.98	8.75
MEAN	17.51	340.19	108.60	322.39	1096.53	0.31	2.34	2.07	6.78
HUB	14.85	366.51	174.16	322.49	1096.78	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	312.35	395.41	228.63	0.36	1660.61	0.92	0.87		
MEAN	276.03	363.27	167.44	0.33	1902.99	0.92	0.87	0.87	1.20
HUB	234.15	328.02	59.99	0.30	2587.81	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.96	1.03	8.41	516.58	1.01	507.80	503.15	45.50
MEAN	8.99	1.03	8.42	517.19	1.01	508.04	503.54	45.15
HUB	9.09	1.04	8.42	518.89	1.01	508.27	504.83	44.76

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	14.55	35.32	31.50	3.82	0.93	0.16	1.40
MEAN	18.62	27.45	23.50	3.95	0.90	0.19	1.62
HUB	28.37	10.54	6.50	4.04	0.90	0.25	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.951	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	379.8801	109.3113	363.8130	1094.4636	0.3471	-0.2066	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.0071	8.2992	506.1404	504.6379	47.9495	16.7234	31.5000	14.7766

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	365.6349	79.7608	356.8292	1095.3652	0.3338	-0.1428	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.9912	8.3343	506.9738	504.3038	451.3937	0.0369	0.1221

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	372.8033	0.0000	372.8033	1094.8881	0.3405	-0.0333	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.2757	506.5367	504.5299	0.0000	0.0600	0.0991	-0.2415

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.6939	8.9542	1.0254	517.5217	5.1030	339.0038	2.6279

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
32282.018	0.331	90.239	459610.813	0.567429E-02

Melt Ratio at Stator LE, Throat, TE
0.30465E+00 0.33740E+00 0.43109E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =-3.007 EfDer = 0.894 SH = 0.585066E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.466	1806.825	8.954	517.512	1.000	1.000	0.980

W Kg/sec = 22.484 Wdry = 49.176 WH2O = 0.289 lbm/sec H2O = 4.201g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
81.115	1808.881	1.374	0.253	53.538	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
66349.148	38723.328	2.154	513.330	238.301	395.845	1.661

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	310.20	-0.11	310.20	0.28	0.40	304.02
MEAN	16.97	0.00	-0.02	310.20	-0.11	310.20	0.28	0.37	
HUB	14.32	0.00	-0.02	310.20	-0.11	310.20	0.28	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	44.40	46.36	-1.96	303.68	434.18	8.48	509.91	503.58	44.45
MEAN	40.79	43.80	-3.01	267.59	409.74	8.48	509.91	503.58	44.45
HUB	36.06	37.84	-1.78	225.79	383.74	8.48	509.91	503.58	44.45

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	342.89	56.67	338.17	1099.53	0.31	2.16	1.89	8.34
MEAN	16.57	348.08	84.99	337.55	1100.13	0.32	2.24	1.97	6.35
HUB	13.89	371.60	155.72	337.40	1100.72	0.34	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	297.69	415.27	241.02	0.38	1072.07	0.92	0.82		
MEAN	261.33	380.83	176.34	0.35	1410.44	0.92	0.82	0.82	1.14
HUB	219.01	343.28	63.29	0.31	2164.51	0.92	0.82		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.09	1.02	8.51	520.17	1.01	510.88	505.42	43.41
MEAN	9.14	1.02	8.54	521.01	1.01	511.44	505.87	42.64
HUB	9.24	1.03	8.55	522.89	1.01	511.98	507.14	41.86

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	9.51	35.48	31.50	3.98	0.93	0.09	1.40
MEAN	14.13	27.58	23.50	4.08	0.89	0.13	1.62
HUB	24.78	10.62	6.50	4.12	0.89	0.21	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.894	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	381.5075	85.4687	371.8105	1098.4139	0.3473	-0.1696	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1496	8.4298	509.8500	506.7896	44.7470	12.9458	32.4000	19.4542

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	381.2625	85.5060	371.5505	1098.4221	0.3471	-0.1983	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.1260	8.4078	509.8562	506.7557	432.2457	0.0478	0.0858

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	379.5848	0.0000	379.5848	1098.5010	0.3455	-0.0850	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.3686	509.9308	506.6803	0.0000	0.0600	0.1285	-0.2611

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.5003	9.0756	1.0136	521.3087	3.8428	416.6091	3.2295

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
24333.619	0.275	68.021	478813.281	0.595498E-02

Melt Ratio at Stator LE, Throat, TE
0.71296E+00 0.74570E+00 0.84193E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-5.845 EfDer = 0.831 SH = 0.605555E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.466	1806.825	9.076	521.295	1.000	1.000	0.980

W Kg/sec = 22.484 Wdry = 49.166 WH2O = 0.300 lbm/sec H2O = 4.376g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
80.322	1802.298	1.374	0.253	53.545	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
65933.898	38720.152	2.160	509.668	236.002	384.739	1.630

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	310.48	-0.11	310.48	0.28	0.38	288.13
MEAN	15.91	0.00	-0.02	310.48	-0.11	310.48	0.28	0.36	
HUB	13.07	0.00	-0.02	310.48	-0.11	310.48	0.28	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	42.95	47.36	-4.41	288.86	424.14	8.60	513.69	505.41	40.58
MEAN	38.95	44.80	-5.85	250.91	399.26	8.60	513.69	505.41	40.58
HUB	33.59	38.84	-5.25	206.08	372.71	8.60	513.69	505.41	40.58

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	341.24	38.80	339.03	1102.67	0.31	2.05	1.78	7.43
MEAN	15.50	344.75	65.91	338.39	1103.33	0.31	2.13	1.86	5.75
HUB	12.59	364.02	134.42	338.29	1103.96	0.33	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	282.87	417.74	244.07	0.38	698.06	0.92	0.76		
MEAN	244.36	382.56	178.45	0.35	1023.11	0.92	0.76	0.76	1.11
HUB	198.51	344.31	64.09	0.31	1693.76	0.92	0.76		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.16	1.01	8.58	523.02	1.00	513.83	506.85	40.80
MEAN	9.20	1.01	8.61	523.83	1.00	514.45	507.24	40.01
HUB	9.28	1.02	8.62	525.50	1.01	515.04	508.29	39.22

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	6.53	35.75	31.50	4.25	0.93	0.05	1.40
MEAN	11.02	27.80	23.50	4.30	0.87	0.09	1.64
HUB	21.67	10.73	6.50	4.23	0.87	0.16	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.831	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	393.6943	67.1163	387.9312	1100.5654	0.3577	-0.2817	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.2016	8.4363	511.8837	508.5747	43.4170	9.8156	33.0000	23.1844

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   406.2094    92.7583   395.4770  1099.7153     0.3694    -0.4345     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1466     8.3383   511.0959   508.8910   410.5396     0.1102     0.0582

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   395.0504     0.0000   395.0504  1100.4709     0.3590    -0.0971     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.3619   511.8028   508.8167     0.0000     0.0600     0.1438    -0.3958

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.2785     9.1261     1.0056   524.1158     2.8199   523.5421     4.0585

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  17868.723       0.223      49.949  509690.469   0.634116E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.0546   Tt4 =   524.1158   T1  =   496.9790

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    171984.30    480.7556     89.6513      1.1495      0.7084      5.8368      1.0546     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 15435 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 7.226   EfDer =  1.000    SH =  0.377960E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     47.699    1592.219       9.337     510.149       1.000       1.000       0.980
  W Kg/sec =  21.681  Wdry =  47.519  WH2O = 0.180  lbm/sec   H2O =   2.955g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     74.474    1605.484       1.376       0.251      53.471      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58759.887   37371.137       3.805     831.557     218.521     619.754       2.836

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   169.59    -0.06   169.59     0.15     0.30   289.03
 MEAN    17.06     0.00    -0.02   169.59    -0.06   169.59     0.15     0.27
 HUB     12.51     0.00    -0.02   169.59    -0.06   169.59     0.15     0.22

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     59.40    50.47     8.93   286.65   333.11     9.19   507.86   495.24    33.57
 MEAN    54.43    47.20     7.23   237.05   291.51     9.19   507.86   495.24    33.57
 HUB     45.72    38.62     7.10   173.82   242.89     9.19   507.86   495.24    33.57

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   284.37   160.57   234.70  1099.98      0.26     7.29     6.52    16.04
 MEAN    18.04   296.19   179.58   235.54  1099.22      0.27     7.43     6.80    12.53
 HUB     15.00   331.90   232.21   237.14  1097.88      0.30     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    286.65   266.42   126.08     0.24  3313.74      0.92     0.91
 MEAN   250.61   246.02    71.02     0.22  3239.96      0.92     0.91     0.91     1.33
 HUB    208.42   238.33    23.78     0.22  3483.82      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.79     1.05     9.35   517.43     1.01   511.00   501.42    35.57
 MEAN     9.78     1.05     9.31   517.27     1.01   510.30   501.52    36.33
 HUB      9.81     1.05     9.22   517.81     1.02   509.06   502.34    37.69

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     34.38    28.24    24.20     4.04     0.93     0.33     1.80
 MEAN    37.32    16.78    12.70     4.08     0.93     0.30     2.22
 HUB     44.40    -5.73    -9.30     3.57     0.93     0.19     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       1.000       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   309.7457   179.2344   252.6211  1098.6476     0.2819    -0.0672     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     9.7903     9.2732   509.8652   502.0207    37.5203    35.3557    35.4000     0.0443

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   257.6876    63.0382   249.8581  1101.1241     0.2340     0.2634     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     9.7898     9.4259   512.1810   501.4330   554.9116     0.0111     0.3818

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   255.5613     0.0000   255.5613  1101.1445     0.2321     0.2901     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.4232   512.2147   502.0565     0.0000     0.0600     0.0366     0.2579
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8897     9.7770     1.0471   517.3922     7.3542   213.0297     1.6514

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  46366.926       0.564     124.982  460044.156   0.488743E-02

Melt Ratio at Stator LE, Throat, TE
0.73424E+00 0.83809E+00 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 4.724   EfDer =  0.996    SH =  0.638085E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
    47.699    1592.219       9.777     517.389       1.000       1.000       0.980
 W Kg/sec =  21.681  Wdry =  47.395  WH2O = 0.304  lbm/sec   H2O =   5.089g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    71.627    1594.230       1.373       0.253      53.555      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 57607.160   37332.371       2.805     590.487     210.481     468.502       2.226

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   234.12    -0.08   234.12     0.21     0.34   285.89
 MEAN   18.08     0.00    -0.02   234.12    -0.08   234.12     0.21     0.31
 HUB    15.21     0.00    -0.02   234.12    -0.08   234.12     0.21     0.29

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    50.66    46.36     4.30   285.54   369.31     9.48   513.07   504.95    48.23
 MEAN   47.02    42.30     4.72   251.19   343.44     9.48   513.07   504.95    48.23
 HUB    42.08    37.84     4.24   211.34   315.45     9.48   513.07   504.95    48.23

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   276.05   104.32   255.58  1104.98     0.25     2.33     2.04     9.02
 MEAN   18.01   282.19   118.93   255.91  1104.71     0.26     2.40     2.13     7.35
 HUB    15.22   305.04   165.32   256.35  1104.46     0.28     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   283.73   312.26   179.41     0.28  2131.81     0.92     0.91
 MEAN  250.24   287.63   131.31     0.26  2143.46     0.92     0.91     0.91     1.29
 HUB   211.52   260.48    46.20     0.24  2517.95     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.08     1.03     9.66   522.06     1.01   516.05   508.14    45.82
 MEAN   10.08     1.03     9.64   522.09     1.01   515.81   508.26    46.14
 HUB    10.13     1.04     9.62   522.91     1.01   515.57   509.03    46.44

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    22.20    35.07    31.50     3.57     0.93     0.26     1.40
 MEAN   24.93    27.16    23.50     3.66     0.92     0.27     1.63
 HUB    32.82    10.22     6.50     3.72     0.92     0.31     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.996       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   311.7185   119.2681   287.9991  1103.4813     0.2825    -0.1802     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
  10.0905     9.5565   514.6945   509.0356    48.0286    22.4958    30.6000     8.1042

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   284.6541    60.3487   278.1833  1104.8370     0.2576     0.0063     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500    10.0870     9.6405   515.9668   508.6331   491.5697     0.0176     0.1920

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   294.6316     0.0000   294.6316  1104.3398     0.2668     0.0655     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.5915	515.5125	509.1456	0.0000	0.0600	0.0581	-0.1007

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8350	10.0685	1.0298	522.3496	4.9611	281.9450	2.1856

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
31487.857	0.391	84.876	426707.281	0.692505E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 1.278 EfDer = 0.968 SH = 0.755272E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
47.699	1592.219	10.068	522.348	1.000	1.000	0.980

W Kg/sec = 21.681 Wdry = 47.339 WH2O = 0.360 lbm/sec H2O = 6.122g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.885	1586.647	1.372	0.254	53.593	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56673.719	37314.809	2.654	545.479	205.522	424.468	2.065

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	249.34	-0.09	249.34	0.23	0.34	277.88
MEAN	17.74	0.00	-0.02	249.34	-0.09	249.34	0.23	0.32	
HUB	15.05	0.00	-0.02	249.34	-0.09	249.34	0.23	0.29	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	48.21	46.36	1.85	278.87	374.15	9.73	517.46	509.58	49.92
MEAN	44.68	43.40	1.28	246.47	350.66	9.73	517.46	509.58	49.92
HUB	40.00	38.84	1.16	209.12	325.48	9.73	517.46	509.58	49.92

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	284.60	82.57	272.36	1108.54	0.26	2.26	1.98	8.75
MEAN	17.51	290.87	102.10	272.37	1108.59	0.26	2.34	2.07	6.78
HUB	14.85	314.01	155.97	272.54	1108.65	0.28	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	275.25	333.63	192.69	0.30	1637.38	0.92	0.89		
MEAN	243.25	306.77	141.15	0.28	1788.94	0.92	0.89	0.89	1.22
HUB	206.34	277.15	50.36	0.25	2317.48	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.30	1.02	9.84	525.92	1.01	519.56	512.14	48.46
MEAN	10.32	1.02	9.84	526.25	1.01	519.61	512.39	48.38
HUB	10.39	1.03	9.84	527.41	1.01	519.66	513.32	48.26

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	16.86	35.28	31.50	3.78	0.93	0.19	1.40
MEAN	20.55	27.39	23.50	3.89	0.91	0.21	1.62
HUB	29.78	10.47	6.50	3.97	0.91	0.27	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.968	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	323.0648	102.7700	306.2829	1107.1943	0.2918	-0.1944	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3295	9.7482	518.3336	513.2755	50.5056	18.5486	31.5000	12.9514

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	307.6478	67.1113	300.2386	1108.0034	0.2777	-0.0987	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.3210	9.7933	519.0981	513.0313	451.3937	0.0272	0.1454

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   313.0692     0.0000   313.0692  1107.7137     0.2826    -0.0019     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.7470   518.8351   513.4150     0.0000     0.0600     0.0869    -0.1926

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.7434    10.2916     1.0222   526.5278     4.1800   317.1704     2.4587

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  26623.080       0.351      71.763  432697.625   0.808859E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =-1.814   EfDer =  0.918    SH =  0.870898E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     47.699    1592.219      10.292     526.526       1.000       1.000       0.980
 W Kg/sec =  21.681  Wdry =  47.283  WH2O = 0.415  lbm/sec   H2O =   7.136g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     68.643    1580.339       1.370       0.255      53.631      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  56065.246   37297.418       2.541     513.330     202.011     395.845       1.960

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   262.11    -0.09   262.11     0.24     0.34   265.61
 MEAN    16.97     0.00    -0.02   262.11    -0.09   262.11     0.24     0.32
 HUB     14.32     0.00    -0.02   262.11    -0.09   262.11     0.24     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     45.60    46.36    -0.76   267.61   374.66     9.91   521.15   513.54    51.42
 MEAN    41.99    43.80    -1.81   235.80   352.63     9.91   521.15   513.54    51.42
 HUB     37.22    37.84    -0.62   198.97   329.13     9.91   521.15   513.54    51.42

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     18.88   291.37    59.28   285.28  1111.31      0.26     2.16     1.89     8.34
 MEAN    16.57   296.50    81.66   285.04  1111.60      0.27     2.24     1.97     6.35
 HUB     13.89   317.48   139.79   285.04  1111.88      0.29     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    262.33   350.16   203.05     0.32  1121.04      0.92     0.84
 MEAN   230.29   321.46   148.63     0.29  1354.92      0.92     0.84     0.84     1.17
 HUB    193.00   289.97    53.21     0.26  1942.98      0.92     0.84

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.44     1.01     9.96   528.97     1.00   522.32   515.49    51.05
 MEAN    10.47     1.02     9.98   529.47     1.01   522.59   515.79    50.64
 HUB     10.55     1.03     9.98   530.75     1.01   522.86   516.72    50.18

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     11.74    35.44    31.50     3.94     0.93     0.12     1.40
 MEAN    15.99    27.54    23.50     4.04     0.89     0.16     1.62
 HUB     26.12    10.57     6.50     4.07     0.89     0.23     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.918       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   323.6249    82.1174   313.0332  1110.4363     0.2914    -0.1600     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.4826     9.8946   521.5363   516.5862    52.4597    14.6991    32.4000    17.7009

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   320.3038    71.8348   312.1447  1110.6090     0.2884    -0.1569     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4688     9.8933   521.7050   516.5800   432.2457     0.0369     0.1074

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   318.4912     0.0000   318.4912  1110.6991     0.2867    -0.0585     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.8602   521.7966   516.7507     0.0000     0.0600     0.1182    -0.2213

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.5807    10.4270     1.0132   529.7309     3.2048   384.0265     2.9769

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  20482.127       0.298      55.210  451212.281   0.923689E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-4.660   EfDer =  0.858    SH =  0.987119E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     47.699    1592.219      10.427     529.729       1.000       1.000       0.980
 W Kg/sec =  21.681  Wdry =  47.228  WH2O = 0.471  lbm/sec   H2O =   8.141g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     67.957    1575.554       1.369       0.256      53.668      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  55706.098   37279.875       2.547     509.668     200.133     384.739       1.922

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   262.30    -0.09   262.30     0.24     0.33   251.88
 MEAN    15.91     0.00    -0.02   262.30    -0.09   262.30     0.24     0.31
 HUB     13.07     0.00    -0.02   262.30    -0.09   262.30     0.24     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     44.15    47.36    -3.21   254.55   365.58    10.04   524.36   516.66    52.75
 MEAN    40.14    44.80    -4.66   221.11   343.12    10.04   524.36   516.66    52.75
 HUB     34.71    38.84    -4.13   181.60   319.09    10.04   524.36   516.66    52.75

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   289.07    43.80   285.73  1113.90      0.26     2.05     1.78     7.43
 MEAN    15.50   292.78    65.02   285.47  1114.23      0.26     2.13     1.86     5.75
 HUB     12.59   310.11   121.06   285.50  1114.55      0.28     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    249.27   351.94   205.47     0.32   787.41      0.92     0.78
 MEAN   215.34   322.63   150.32     0.29  1009.04      0.92     0.78     0.78     1.14
 HUB    174.93   290.54    53.87     0.26  1525.35      0.92     0.78

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.53     1.01    10.05   531.44     1.00   524.92   518.25    53.18
 MEAN    10.55     1.01    10.07   531.92     1.00   525.23   518.50    52.68
 HUB     10.62     1.02    10.07   533.04     1.01   525.53   519.28    52.15

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      8.71    35.72    31.50     4.22     0.93     0.08     1.40
 MEAN    12.83    27.77    23.50     4.27     0.88     0.12     1.64
 HUB     22.98    10.69     6.50     4.19     0.88     0.18     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.858       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   332.3166    66.2090   325.6542  1112.3760     0.2987    -0.2679     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.5554     9.9349   523.5191   519.5959    55.5051    11.4922    33.0000    21.5078
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   339.3025    77.4800   330.3378  1111.9832     0.3051    -0.3769     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.5211     9.8771   523.1550   519.8016   410.5396     0.0885     0.0777

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   330.4529     0.0000   330.4529  1112.4689     0.2970    -0.0788     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.8861   523.6181   519.7850     0.0000     0.0600     0.1383    -0.3589

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.3931    10.4962     1.0066   532.1303     2.4009   474.1541     3.6756

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  15397.004       0.248      41.503  481077.063   0.103980E-01

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.0431   Tt4 =   532.1303   T1  =   510.1488

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    140356.98    378.3334     74.4742      1.1241      0.7470      7.2256      1.0431     37.3740
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5µm, 2g/m^3, ISA +36R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 10% 39000 Ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.675   EfDer =  0.953    SH =  0.130125E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.912    2483.351       4.265     477.912       1.000       1.000       0.980
  W Kg/sec =  11.778  Wdry =  25.878  WH2O = 0.034  lbm/sec   H2O =   0.495g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     85.734    2587.131       1.380       0.249      53.390      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  65632.930   20321.205       3.311     831.557     251.148     619.754       2.468

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   189.43    -0.07   189.43     0.18     0.46   465.75
 MEAN    17.06     0.00    -0.02   189.43    -0.07   189.43     0.18     0.39
 HUB     12.51     0.00    -0.02   189.43    -0.07   189.43     0.18     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.04    50.47    16.57   447.08   485.61      4.17   475.04   464.31    19.82
 MEAN    62.88    47.20    15.68   369.72   415.48      4.17   475.04   464.31    19.82
 HUB     55.06    38.62    16.44   271.11   330.78      4.17   475.04   464.31    19.82

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   400.12   309.72   253.32  1074.72      0.37     7.29     6.52    16.04
 MEAN    18.04   404.43   312.50   256.72  1071.52      0.38     7.43     6.80    12.53
 HUB     15.00   437.42   350.72   261.41  1067.61      0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    447.08   288.17   137.36     0.27  6390.87      0.92     0.87
 MEAN   390.86   268.42    78.37     0.25  5637.31      0.92     0.87     0.87     1.78
 HUB    325.07   262.66    25.65     0.25  5261.58      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.93     1.16     4.48   500.11     1.05   487.28   479.32    18.34
 MEAN     4.84     1.14     4.40   497.49     1.04   484.38   478.15    20.29
 HUB      4.80     1.13     4.29   496.19     1.04   480.85   478.02    22.95

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.72    28.47    24.20     4.27     0.93     0.58     1.80
 MEAN    50.60    16.98    12.70     4.28     0.95     0.53     2.22
 HUB     53.30    -5.60    -9.30     3.70     0.95     0.40     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.953       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   416.0938   311.8899   275.4247  1071.0731     0.3885    -0.0351     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8533     4.3800   484.0800   478.7642    21.3571    48.5528    35.4000   -13.1528

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   273.1366    66.8176   264.8377  1079.7346     0.2530     0.5210     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8408     4.6330   491.9617   477.4951   554.9116     0.0367     0.6141

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   272.0848     0.0000   272.0848  1079.7498     0.2520     0.4890     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.6115	492.0099	478.4286	0.0000	0.0600	0.0882	0.4751

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8112	4.8166	1.1294	497.9269	20.0159	166.7671	1.2928

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
125138.016	0.626	183.239	263135.219	0.247566E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =15.263 EfDer = 0.956 SH = 0.382036E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.912	2483.351	4.817	497.926	1.000	1.000	0.980

W Kg/sec = 11.778 Wdry = 25.813 WH2O = 0.099 lbm/sec H2O = 1.556g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
77.482	2534.624	1.377	0.251	53.472	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
61280.063	20300.973	2.598	590.487	227.312	468.502	2.061

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	249.04	-0.09	249.04	0.23	0.47	454.53
MEAN	18.08	0.00	-0.02	249.04	-0.09	249.04	0.23	0.43	
HUB	15.21	0.00	-0.02	249.04	-0.09	249.04	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.79	46.36	14.43	445.35	510.33	4.64	492.99	481.42	30.55
MEAN	57.56	42.30	15.26	391.78	464.31	4.64	492.99	481.42	30.55
HUB	52.93	37.84	15.09	329.62	413.19	4.64	492.99	481.42	30.55

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	367.98	258.38	262.01	1094.00	0.34	2.33	2.04	9.02
MEAN	18.01	367.18	254.45	264.72	1091.46	0.34	2.40	2.13	7.35
HUB	15.22	388.70	281.80	267.73	1088.96	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	442.53	320.25	184.15	0.29	5277.82	0.92	0.87		
MEAN	390.30	297.54	135.85	0.27	4584.09	0.92	0.87	0.87	1.72
HUB	329.90	272.02	48.10	0.25	4291.16	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.40	1.12	5.00	516.11	1.04	505.35	491.34	21.59
MEAN	5.32	1.11	4.93	513.72	1.03	503.00	490.37	23.26
HUB	5.29	1.10	4.85	512.71	1.03	500.70	490.36	25.02

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	44.60	35.10	31.50	3.60	0.93	0.55	1.40
MEAN	43.87	27.17	23.50	3.67	0.95	0.53	1.63
HUB	46.47	10.19	6.50	3.69	0.95	0.51	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.956	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	392.3168	255.1592	298.0038	1090.2664	0.3598	-0.1052	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3349	4.8853	501.9557	491.0972	24.2666	40.5711	30.6000	-9.9711

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	288.0955	61.0783	281.5466	1096.3595	0.2628	0.3767	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.3282	5.0825	507.5898	489.6322	491.5697	0.0263	0.4720

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	298.6786	0.0000	298.6786	1095.8081	0.2726	0.3619	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0481	507.0981	490.1649	0.0000	0.0600	0.0683	0.2931

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8285	5.3109	1.1026	514.1827	16.2572	187.3820	1.4526

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
102329.727	0.523	149.841	239133.094	0.439095E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.289 EfDer = 0.972 SH = 0.519522E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.912	2483.351	5.311	514.182	1.000	1.000	0.980

W Kg/sec = 11.778 Wdry = 25.777 WH2O = 0.135 lbm/sec H2O = 2.258g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
71.407	2494.236	1.375	0.252	53.517	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
57433.883	20289.861	2.601	545.479	209.679	424.468	2.024

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	252.68	-0.09	252.68	0.23	0.46	436.84
MEAN	17.74	0.00	-0.02	252.68	-0.09	252.68	0.23	0.42	
HUB	15.05	0.00	-0.02	252.68	-0.09	252.68	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.85	46.36	13.49	434.94	503.09	5.12	509.13	491.17	24.54
MEAN	56.69	43.40	13.29	384.42	460.10	5.12	509.13	491.17	24.54
HUB	52.24	38.84	13.40	326.15	412.65	5.12	509.13	491.17	24.54

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	359.48	242.06	265.77	1109.93	0.32	2.26	1.98	8.75
MEAN	17.51	360.76	241.32	268.16	1107.76	0.33	2.34	2.07	6.78
HUB	14.85	384.28	272.64	270.81	1105.63	0.35	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	429.31	325.10	187.24	0.29	4797.04	0.92	0.89		
MEAN	379.39	301.62	138.07	0.27	4226.28	0.92	0.89	0.89	1.67
HUB	321.82	275.24	49.18	0.25	4050.02	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.89	1.11	5.48	530.64	1.03	520.41	499.63	18.51
MEAN	5.82	1.10	5.41	528.68	1.03	518.38	498.94	19.64
HUB	5.79	1.09	5.34	528.08	1.03	516.39	499.14	20.82

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	42.33	35.17	31.50	3.67	0.93	0.52	1.40
MEAN	41.98	27.24	23.50	3.74	0.94	0.51	1.62
HUB	45.19	10.29	6.50	3.79	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.972	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	387.0973	242.9065	301.3979	1106.5313	0.3498	-0.1132	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.8280	5.3630	517.2838	499.6839	20.4837	38.8665	31.5000	-7.3665

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	296.3646	64.6499	289.2271	1111.7532	0.2666	0.3267	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.8236	5.5478	522.1880	498.3616	451.3937	0.0204	0.4470

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	301.4240	0.0000	301.4240	1111.4700	0.2712	0.3480	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5249	521.9407	498.7748	0.0000	0.0600	0.0546	0.2724

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8503	5.8092	1.0938	529.1232	14.9531	192.5024	1.4923

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
94543.930	0.513	138.440	237763.359	0.589117E-02

Melt Ratio at Stator LE, Throat, TE
0.36768E-02 0.27261E-01 0.15483E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.720 EfDer = 0.982 SH = 0.664421E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.912	2483.351	5.809	529.116	1.000	1.000	0.980

W Kg/sec = 11.778 Wdry = 25.740 WH2O = 0.172 lbm/sec H2O = 3.068g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
66.224	2458.770	1.373	0.253	53.564	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54039.625	20278.100	2.637	513.330	194.633	395.845	2.034

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	252.64	-0.09	252.64	0.23	0.44	413.25
MEAN	16.97	0.00	-0.02	252.64	-0.09	252.64	0.23	0.40	
HUB	14.32	0.00	-0.02	252.64	-0.09	252.64	0.23	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.82	46.36	12.46	417.39	487.97	5.61	524.09	499.40	20.03
MEAN	55.52	43.80	11.72	367.78	446.26	5.61	524.09	499.40	20.03
HUB	50.86	37.84	13.02	310.33	400.23	5.61	524.09	499.40	20.03

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	345.81	222.23	264.95	1124.10	0.31	2.16	1.89	8.34
MEAN	16.57	347.03	221.54	267.11	1122.14	0.31	2.24	1.97	6.35
HUB	13.89	369.11	252.24	269.47	1120.22	0.33	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	409.15	324.25	186.92	0.29	4197.40	0.92	0.90		
MEAN	359.18	300.49	137.64	0.27	3673.27	0.92	0.90	0.90	1.63
HUB	301.01	273.85	48.78	0.24	3504.84	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.35	1.09	5.95	543.44	1.03	534.02	506.14	15.60
MEAN	6.28	1.08	5.88	541.65	1.02	532.16	505.54	16.41
HUB	6.26	1.08	5.81	541.08	1.02	530.34	505.73	17.25

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	39.99	35.20	31.50	3.70	0.93	0.50	1.40
MEAN	39.67	27.26	23.50	3.76	0.94	0.48	1.62
HUB	43.11	10.26	6.50	3.76	0.94	0.48	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.982	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	368.0127	222.7872	292.9150	1121.2782	0.3282	-0.0895	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.2892	5.8452	531.3793	506.0872	16.8445	37.2561	32.4000	-4.8561

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   293.9662    65.9280   286.4780  1125.3237     0.2612     0.2883     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2868     6.0000   535.2278   505.0073   432.2457     0.0157     0.4259

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   291.5994     0.0000   291.5994  1125.3892     0.2591     0.3352     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9940   535.3026   505.1658     0.0000     0.0600     0.0446     0.2739

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8685     6.2749     1.0802   541.9985    12.9412   207.4708     1.6083

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  82155.680       0.491     120.300  243410.547   0.708750E-02

Melt Ratio at Stator LE, Throat, TE
0.68931E+00 0.79032E+00 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =10.275   EfDer =  0.990    SH =  0.840365E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.912    2483.351       6.275     541.997       1.000       1.000       0.980
 W Kg/sec =  11.778  Wdry =  25.694  WH2O = 0.218  lbm/sec   H2O =   4.100g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.051    2429.390       1.371       0.255      53.621      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  51153.758   20263.750       2.792     509.668     182.558     384.739       2.107

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   240.86    -0.08   240.86     0.21     0.41   388.38
 MEAN    15.91     0.00    -0.02   240.86    -0.08   240.86     0.21     0.37
 HUB     13.07     0.00    -0.02   240.86    -0.08   240.86     0.21     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.76    47.36    11.40   397.02   464.44     6.08   537.45   506.44    17.45
 MEAN    55.08    44.80    10.28   344.86   420.71     6.08   537.45   506.44    17.45
 HUB     49.63    38.84    10.79   283.24   371.87     6.08   537.45   506.44    17.45

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   328.28   208.98   253.17  1136.65      0.29     2.05     1.78     7.43
 MEAN    15.50   326.53   203.59   255.28  1134.65      0.29     2.13     1.86     5.75
 HUB     12.59   342.75   226.18   257.53  1132.67      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    388.78   310.53   179.81     0.27  3750.55      0.92     0.91
 MEAN   335.85   287.51   132.26     0.25  3156.51      0.92     0.91     0.91     1.62
 HUB    272.84   261.72    46.66     0.23  2848.72      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.78     1.08     6.41   554.74     1.02   546.29   512.64    14.69
 MEAN     6.70     1.07     6.33   552.72     1.02   544.36   511.96    15.44
 HUB      6.66     1.06     6.26   551.68     1.02   542.47   511.89    16.21

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.54    35.38    31.50     3.88     0.93     0.49     1.40
 MEAN    38.57    27.39    23.50     3.89     0.94     0.46     1.64
 HUB     41.29    10.27     6.50     3.77     0.94     0.44     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.990       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   356.9638   207.3252   290.5846  1133.2120     0.3150    -0.1683     2.0437
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    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7066     6.2697   543.0731   512.7065    16.1251    35.5070    33.0000    -2.5070

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   296.7556    67.7644   288.9150  1136.4066     0.2611     0.1756     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.7043     6.4002   546.1558   511.9073   410.5396     0.0262     0.4013

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   288.7169     0.0000   288.7169  1136.7659     0.2540     0.3247     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.4116   546.5265   512.3521     0.0000     0.0600     0.0388     0.2056

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8740     6.6995     1.0677   553.0466    11.0505   226.1682     1.7532

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  70594.094       0.467     103.370  255458.406   0.962266E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.1572   Tt4 =   553.0466   T1  =   477.9123

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    474761.47    695.1902     85.7343      1.5710      0.8321     15.6754      1.1572     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 38334 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.664   EfDer =  0.953    SH =  0.115771E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.054    2402.380       4.199     471.469       1.000       1.000       0.980
  W Kg/sec =  11.388  Wdry =  25.025  WH2O = 0.029  lbm/sec   H2O =   0.440g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.618    2519.823       1.380       0.249      53.386      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  63523.379   19649.746       3.395     831.557     244.925     619.754       2.530

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   183.34    -0.06   183.34     0.17     0.45   453.63
 MEAN    17.06     0.00    -0.02   183.34    -0.06   183.34     0.17     0.38
 HUB     12.51     0.00    -0.02   183.34    -0.06   183.34     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.03    50.47    16.56   432.50   469.81     4.11   468.77   460.33    22.94
 MEAN    62.86    47.20    15.66   357.66   401.97     4.11   468.77   460.33    22.94
 HUB     55.05    38.62    16.43   262.27   320.05     4.11   468.77   460.33    22.94

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   387.28   299.27   245.81  1066.92      0.36     7.29     6.52    16.04
 MEAN    18.04   391.51   302.18   248.92  1063.92      0.37     7.43     6.80    12.53
 HUB     15.00   423.38   339.31   253.22  1060.25      0.40     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    432.50   279.59   133.23     0.26  6175.30      0.92     0.87
 MEAN   378.12   260.25    75.94     0.24  5451.23      0.92     0.87     0.87     1.77
 HUB    314.47   254.43    24.84     0.24  5090.41      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.81     1.15     4.40   492.23     1.04   480.20   474.94    21.10
 MEAN     4.74     1.13     4.32   489.79     1.04   477.50   473.76    23.26
 HUB      4.70     1.12     4.22   488.58     1.04   474.21   473.60    26.20

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.60    28.46    24.20     4.26     0.93     0.58     1.80
 MEAN    50.52    16.97    12.70     4.27     0.95     0.53     2.22
 HUB     53.27    -5.60    -9.30     3.70     0.95     0.39     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.953       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   402.8041   301.5946   267.0053  1063.5055     0.3788    -0.0355     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.7475     4.3060   477.2115   474.3395    24.4234    48.4811    35.4000   -13.0811

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   265.3363    64.9094   257.2744  1071.6456     0.2476     0.5192     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.7363     4.5413   484.5645   473.1787   554.9116     0.0356     0.6116

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   264.2646     0.0000   264.2646  1071.6598     0.2466     0.4869     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.5210   484.6119   474.0171     0.0000     0.0600     0.0878     0.4729
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8118     4.7135     1.1225   490.1987    18.7315   166.9134     1.2939

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 117011.172       0.626     165.668  256825.938   0.212779E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.158   EfDer =  0.957    SH =  0.321873E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.054    2402.380       4.713     490.198       1.000       1.000       0.980
 W Kg/sec =  11.388  Wdry =  24.973  WH2O = 0.081  lbm/sec   H2O =   1.305g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.960    2471.233       1.377       0.251      53.453      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59520.004   19633.756       2.651     590.487     222.765     468.502       2.103

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   241.90    -0.08   241.90     0.23     0.46   443.16
 MEAN    18.08     0.00    -0.02   241.90    -0.08   241.90     0.23     0.42
 HUB     15.21     0.00    -0.02   241.90    -0.08   241.90     0.23     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.69    46.36    14.33   430.82   494.16     4.55   485.54   476.67    34.21
 MEAN    57.46    42.30    15.16   379.01   449.69     4.55   485.54   476.67    34.21
 HUB     52.82    37.84    14.98   318.87   400.31     4.55   485.54   476.67    34.21

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   356.40   248.83   255.16  1085.10      0.33     2.33     2.04     9.02
 MEAN    18.01   355.82   245.40   257.65  1082.72      0.33     2.40     2.13     7.35
 HUB     15.22   376.83   272.37   260.42  1080.38      0.35     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    428.10   311.84   179.27     0.29  5082.74      0.92     0.88
 MEAN   377.57   289.57   132.17     0.27  4421.23      0.92     0.88     0.88     1.71
 HUB    319.15   264.58    46.78     0.24  4147.52      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.26     1.12     4.88   507.17     1.03   497.06   486.41    24.41
 MEAN     5.18     1.10     4.82   504.96     1.03   494.88   485.45    26.24
 HUB      5.15     1.09     4.74   504.05     1.03   492.74   485.41    28.16

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     44.28    35.09    31.50     3.59     0.93     0.55     1.40
 MEAN    43.61    27.16    23.50     3.66     0.95     0.52     1.63
 HUB     46.29    10.18     6.50     3.68     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.957       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   380.3160   246.0934   289.9627  1081.5792     0.3516    -0.1063     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.1939     4.7747   493.8824   486.1296    27.3566    40.3215    30.6000    -9.7215

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   280.7521    59.5215   274.3701  1087.2935     0.2582     0.3714     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.1881     4.9567   499.1221   484.8085   491.5697     0.0252     0.4670

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   290.9843     0.0000   290.9843  1086.7678     0.2678     0.3577     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9247	498.6578	485.2908	0.0000	0.0600	0.0668	0.2878

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8301	5.1721	1.0973	505.3959	15.1985	188.1891	1.4588

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
95474.172	0.521	135.175	233610.016	0.368101E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.096 EfDer = 0.973 SH = 0.432838E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.054	2402.380	5.172	505.395	1.000	1.000	0.980

W Kg/sec = 11.388 Wdry = 24.946 WH2O = 0.108 lbm/sec H2O = 1.866g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.289	2433.795	1.376	0.252	53.489	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55968.914	19625.105	2.644	545.479	206.285	424.468	2.058

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	246.24	-0.08	246.24	0.23	0.45	426.25
MEAN	17.74	0.00	-0.02	246.24	-0.08	246.24	0.23	0.41	
HUB	15.05	0.00	-0.02	246.24	-0.08	246.24	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.67	46.36	13.31	420.76	487.59	4.99	500.58	486.18	27.60
MEAN	56.50	43.40	13.10	371.88	446.09	4.99	500.58	486.18	27.60
HUB	52.04	38.84	13.20	315.52	400.30	4.99	500.58	486.18	27.60

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	348.49	232.47	259.62	1100.09	0.32	2.26	1.98	8.75
MEAN	17.51	350.00	232.27	261.82	1098.07	0.32	2.34	2.07	6.78
HUB	14.85	373.09	263.37	264.25	1096.08	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	415.31	317.54	182.84	0.29	4606.95	0.92	0.89		
MEAN	367.02	294.46	134.75	0.27	4067.81	0.92	0.89	0.89	1.66
HUB	311.33	268.57	47.95	0.25	3912.36	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.70	1.10	5.33	520.73	1.03	511.09	494.44	20.98
MEAN	5.64	1.09	5.26	518.93	1.03	509.21	493.76	22.22
HUB	5.62	1.09	5.19	518.42	1.03	507.37	493.96	23.50

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.84	35.16	31.50	3.66	0.93	0.52	1.40
MEAN	41.58	27.23	23.50	3.73	0.94	0.50	1.62
HUB	44.90	10.29	6.50	3.79	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.973	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	375.7832	233.7976	294.1967	1096.8840	0.3426	-0.1147	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6494	5.2158	508.1599	494.4672	23.1615	38.4741	31.5000	-6.9741

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	289.6823	63.1922	282.7058	1101.7693	0.2629	0.3184	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6457	5.3852	512.7049	493.2865	451.3937	0.0194	0.4399

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	294.5774	0.0000	294.5774	1101.5090	0.2674	0.3417	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3640	512.4797	493.7444	0.0000	0.0600	0.0528	0.2645

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8519	5.6326	1.0890	519.3594	13.9645	193.9225	1.5033

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
88045.055	0.510	124.657	232544.234	0.493780E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.437 EfDer = 0.984 SH = 0.578431E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.054	2402.380	5.633	519.359	1.000	1.000	0.980

W Kg/sec = 11.388 Wdry = 24.909 WH2O = 0.145 lbm/sec H2O = 2.642g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.428	2400.854	1.374	0.253	53.536	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52832.625	19613.711	2.671	513.330	192.193	395.845	2.060

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	246.99	-0.09	246.99	0.22	0.43	403.51
MEAN	16.97	0.00	-0.02	246.99	-0.09	246.99	0.22	0.39	
HUB	14.32	0.00	-0.02	246.99	-0.09	246.99	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.55	46.36	12.19	403.78	473.41	5.44	514.54	494.72	23.79
MEAN	55.24	43.80	11.44	355.79	433.19	5.44	514.54	494.72	23.79
HUB	50.56	37.84	12.72	300.21	388.83	5.44	514.54	494.72	23.79

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	335.60	212.72	259.58	1113.40	0.30	2.16	1.89	8.34
MEAN	16.57	337.15	212.72	261.57	1111.58	0.30	2.24	1.97	6.35
HUB	13.89	358.92	243.45	263.74	1109.80	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	395.81	317.66	183.10	0.29	4017.73	0.92	0.90		
MEAN	347.47	294.23	134.75	0.26	3527.04	0.92	0.90	0.90	1.61
HUB	291.20	268.03	47.75	0.24	3382.71	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.12	1.09	5.76	532.67	1.03	523.77	501.50	19.00
MEAN	6.06	1.08	5.69	531.04	1.02	522.06	500.93	19.96
HUB	6.04	1.07	5.63	530.57	1.02	520.38	501.13	20.93

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	39.33	35.20	31.50	3.70	0.93	0.49	1.40
MEAN	39.12	27.26	23.50	3.76	0.94	0.47	1.62
HUB	42.71	10.26	6.50	3.76	0.94	0.47	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.984	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	357.8114	213.9166	286.8251	1110.7365	0.3221	-0.0912	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.0737	5.6597	521.3131	501.5062	20.5515	36.7159	32.4000	-4.3159

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	288.1766	64.6296	280.8358	1114.4989	0.2586	0.2783	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.0719	5.8006	524.8600	500.5273	432.2457	0.0148	0.4166

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	285.8625	0.0000	285.8625	1114.5745	0.2565	0.3266	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.7950	524.9449	500.7390	0.0000	0.0600	0.0429	0.2635

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8688	6.0611	1.0761	531.3946	12.0668	209.5124	1.6241

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
76423.781	0.488	108.203	238353.188	0.635806E-02

Melt Ratio at Stator LE, Throat, TE
0.15994E+00 0.22649E+00 0.44029E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.923 EfDer = 0.992 SH = 0.692348E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.054	2402.380	6.061	531.383	1.000	1.000	0.980

W Kg/sec = 11.388 Wdry = 24.881 WH2O = 0.173 lbm/sec H2O = 3.332g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
61.503	2373.511	1.373	0.254	53.573	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50134.250	19604.760	2.819	509.668	180.791	384.739	2.128

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	236.07	-0.08	236.07	0.21	0.40	379.45
MEAN	15.91	0.00	-0.02	236.07	-0.08	236.07	0.21	0.37	
HUB	13.07	0.00	-0.02	236.07	-0.08	236.07	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.43	47.36	11.07	384.07	450.89	5.88	526.99	501.04	19.77
MEAN	54.72	44.80	9.92	333.61	408.75	5.88	526.99	501.04	19.77
HUB	49.26	38.84	10.42	274.01	361.74	5.88	526.99	501.04	19.77

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	318.81	199.55	248.63	1125.28	0.28	2.05	1.78	7.43
MEAN	15.50	317.58	195.10	250.58	1123.41	0.28	2.13	1.86	5.75
HUB	12.59	333.81	218.17	252.65	1121.57	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	376.11	304.94	176.55	0.27	3581.48	0.92	0.91		
MEAN	324.90	282.20	129.80	0.25	3024.94	0.92	0.91	0.91	1.60
HUB	263.95	256.76	45.77	0.23	2747.84	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.52	1.08	6.18	543.19	1.02	535.19	506.59	16.09
MEAN	6.45	1.06	6.11	541.36	1.02	533.41	505.93	16.88
HUB	6.41	1.06	6.04	540.44	1.02	531.67	505.87	17.70

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.75	35.38	31.50	3.88	0.93	0.48	1.40
MEAN	37.91	27.38	23.50	3.88	0.94	0.45	1.64
HUB	40.81	10.27	6.50	3.77	0.94	0.44	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	347.5023	198.6817	285.1025	1122.0459	0.3097	-0.1709	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.4554	6.0477	532.1459	506.5402	17.5236	34.8718	33.0000	-1.8718

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   291.4716    66.5578   283.7706  1125.0037     0.2591     0.1591     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.4536     6.1641   534.9604   505.8153   410.5396     0.0251     0.3909

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   283.5381     0.0000   283.5381  1125.3649     0.2520     0.3142     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.1758   535.3205   506.1914     0.0000     0.0600     0.0378     0.1918

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8782     6.4490     1.0640   541.6464    10.2793   229.6439     1.7802

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  65302.621       0.462      92.457  250321.750   0.752104E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.1488   Tt4 =   541.6464   T1  =   471.4685

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    442256.81    626.1604     83.6183      1.5358      0.8342     15.6643      1.1488     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 37357 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.680   EfDer =  0.953    SH =  0.105841E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.634    2370.470       4.337     469.497       1.000       1.000       0.980
  W Kg/sec =  11.652  Wdry =  25.607  WH2O = 0.027  lbm/sec   H2O =   0.417g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.661    2491.571       1.380       0.249      53.383      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  62638.320   20105.498       3.435     831.557     242.106     619.754       2.560

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   180.78    -0.06   180.78     0.17     0.44   448.55
 MEAN    17.06     0.00    -0.02   180.78    -0.06   180.78     0.17     0.38
 HUB     12.51     0.00    -0.02   180.78    -0.06   180.78     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.04    50.47    16.57   426.76   463.53     4.25   466.88   459.22    23.61
 MEAN    62.88    47.20    15.68   352.91   396.58     4.25   466.88   459.22    23.61
 HUB     55.07    38.62    16.45   258.79   315.73     4.25   466.88   459.22    23.61

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   382.17   295.27   242.64  1064.49      0.36     7.29     6.52    16.04
 MEAN    18.04   386.33   298.18   245.64  1061.56      0.36     7.43     6.80    12.53
 HUB     15.00   417.70   334.79   249.78  1057.98      0.39     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    426.76   275.97   131.49     0.26  6092.71      0.92     0.87
 MEAN   373.10   256.81    74.92     0.24  5379.01      0.92     0.87     0.87     1.77
 HUB    310.29   250.97    24.50     0.24  5022.67      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.96     1.14     4.54   489.71     1.04   478.00   473.67    21.75
 MEAN     4.88     1.13     4.46   487.34     1.04   475.37   472.48    23.93
 HUB      4.84     1.12     4.36   486.16     1.04   472.17   472.28    26.91

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.59    28.45    24.20     4.25     0.93     0.58     1.80
 MEAN    50.52    16.96    12.70     4.26     0.95     0.53     2.22
 HUB     53.27    -5.60    -9.30     3.70     0.95     0.39     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.953       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   397.4601   297.5988   263.4568  1061.1597     0.3746    -0.0356     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8902     4.4447   475.0867   473.0350    25.1109    48.4823    35.4000   -13.0823

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   262.0305    64.1006   254.0690  1069.0980     0.2451     0.5190     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8790     4.6821   482.2401   471.9552   554.9116     0.0352     0.6111

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   260.9540     0.0000   260.9540  1069.1128     0.2441     0.4864     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.6614   482.2868   472.7352     0.0000     0.0600     0.0878     0.4723
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8118     4.8558     1.1196   487.7373    18.2420   166.8817     1.2937

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 113902.195       0.625     165.000  263499.500   0.192646E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.138   EfDer =  0.957    SH =  0.289925E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.634    2370.470       4.856     487.737       1.000       1.000       0.980
 W Kg/sec =  11.652  Wdry =  25.560  WH2O = 0.074  lbm/sec   H2O =   1.218g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.251    2444.554       1.378       0.251      53.442      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58774.734   20090.896       2.676     590.487     220.644     468.502       2.123

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   238.87    -0.08   238.87     0.22     0.46   438.38
 MEAN    18.08     0.00    -0.02   238.87    -0.08   238.87     0.22     0.41
 HUB     15.21     0.00    -0.02   238.87    -0.08   238.87     0.22     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.67    46.36    14.31   425.10   487.69     4.69   483.19   475.21    35.04
 MEAN    57.44    42.30    15.14   373.97   443.82     4.69   483.19   475.21    35.04
 HUB     52.80    37.84    14.96   314.64   395.10     4.69   483.19   475.21    35.04

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   351.80   245.23   252.24  1082.24      0.33     2.33     2.04     9.02
 MEAN    18.01   351.27   241.97   254.64  1079.93      0.33     2.40     2.13     7.35
 HUB     15.22   372.04   268.70   257.31  1077.64      0.35     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    422.41   308.25   177.18     0.28  5009.38      0.92     0.88
 MEAN   372.56   286.18   130.59     0.26  4359.29      0.92     0.88     0.88     1.71
 HUB    314.91   261.43    46.20     0.24  4091.74      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.40     1.11     5.03   504.26     1.03   494.39   484.92    25.14
 MEAN     5.33     1.10     4.96   502.12     1.03   492.28   483.95    26.99
 HUB      5.30     1.09     4.89   501.23     1.03   490.20   483.89    28.93

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     44.19    35.08    31.50     3.58     0.93     0.55     1.40
 MEAN    43.54    27.15    23.50     3.65     0.95     0.52     1.63
 HUB     46.24    10.18     6.50     3.68     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.957       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   375.4756   242.6453   286.5400  1078.8068     0.3480    -0.1065     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3396     4.9168   491.3033   484.6023    28.1270    40.2583    30.6000    -9.6583

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   277.6086    58.8550   271.2980  1084.3767     0.2560     0.3700     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3339     5.0998   496.3966   483.3698   491.5697     0.0248     0.4656

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   287.6943     0.0000   287.6943  1083.8619     0.2654     0.3565     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0675	495.9436	483.8214	0.0000	0.0600	0.0665	0.2863

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8305	5.3177	1.0951	502.5370	14.8011	188.3730	1.4603

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
92882.055	0.521	134.550	239759.297	0.331106E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.039 EfDer = 0.973 SH = 0.388704E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.634	2370.470	5.318	502.537	1.000	1.000	0.980

W Kg/sec = 11.652 Wdry = 25.535 WH2O = 0.100 lbm/sec H2O = 1.734g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.749	2408.289	1.376	0.251	53.474	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55343.047	20083.025	2.665	545.479	204.646	424.468	2.074

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	243.49	-0.08	243.49	0.22	0.44	421.78
MEAN	17.74	0.00	-0.02	243.49	-0.08	243.49	0.22	0.41	
HUB	15.05	0.00	-0.02	243.49	-0.08	243.49	0.22	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.61	46.36	13.25	415.17	481.38	5.14	497.82	484.65	28.39
MEAN	56.44	43.40	13.04	366.94	440.45	5.14	497.82	484.65	28.39
HUB	51.98	38.84	13.14	311.33	395.30	5.14	497.82	484.65	28.39

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	344.10	228.85	256.97	1096.88	0.31	2.26	1.98	8.75
MEAN	17.51	345.67	228.81	259.10	1094.91	0.32	2.34	2.07	6.78
HUB	14.85	368.59	259.81	261.44	1092.97	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	409.79	314.28	180.94	0.29	4535.28	0.92	0.89		
MEAN	362.14	291.39	133.33	0.27	4007.16	0.92	0.89	0.89	1.66
HUB	307.19	265.70	47.38	0.24	3859.48	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.85	1.10	5.47	517.45	1.03	508.04	492.88	21.67
MEAN	5.79	1.09	5.41	515.71	1.03	506.22	492.19	22.93
HUB	5.77	1.08	5.34	515.23	1.03	504.43	492.37	24.24

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.69	35.15	31.50	3.65	0.93	0.52	1.40
MEAN	41.45	27.23	23.50	3.73	0.94	0.50	1.62
HUB	44.82	10.27	6.50	3.77	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.973	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	371.1905	230.3114	291.0997	1093.7448	0.3394	-0.1150	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7975	5.3603	505.1875	492.8673	23.8980	38.3502	31.5000	-6.8502

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	286.7917	62.5617	279.8849	1098.5012	0.2611	0.3158	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7939	5.5301	509.5987	491.7635	451.3937	0.0190	0.4376

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	291.6147	0.0000	291.6147	1098.2471	0.2655	0.3396	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5088	509.3785	492.1929	0.0000	0.0600	0.0522	0.2620

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8526	5.7807	1.0871	516.1302	13.5942	194.3528	1.5066

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
85590.289	0.510	123.987	238775.250	0.442845E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.347 EfDer = 0.984 SH = 0.517834E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.634	2370.470	5.781	516.130	1.000	1.000	0.980

W Kg/sec = 11.652 Wdry = 25.501 WH2O = 0.133 lbm/sec H2O = 2.444g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.024	2376.364	1.375	0.252	53.516	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52305.426	20072.703	2.688	513.330	190.936	395.845	2.073

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	244.53	-0.08	244.53	0.22	0.42	399.40
MEAN	16.97	0.00	-0.02	244.53	-0.08	244.53	0.22	0.39	
HUB	14.32	0.00	-0.02	244.53	-0.08	244.53	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.47	46.36	12.11	398.42	467.55	5.59	511.40	493.10	24.54
MEAN	55.15	43.80	11.35	351.06	427.90	5.59	511.40	493.10	24.54
HUB	50.47	37.84	12.63	296.23	384.18	5.59	511.40	493.10	24.54

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	331.51	209.14	257.21	1109.87	0.30	2.16	1.89	8.34
MEAN	16.57	333.14	209.37	259.13	1108.11	0.30	2.24	1.97	6.35
HUB	13.89	354.76	240.02	261.23	1106.37	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	390.56	314.75	181.41	0.28	3950.28	0.92	0.90		
MEAN	342.85	291.49	133.48	0.26	3471.45	0.92	0.90	0.90	1.61
HUB	287.33	265.48	47.31	0.24	3335.13	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.27	1.09	5.90	529.07	1.03	520.37	499.89	19.77
MEAN	6.21	1.07	5.84	527.50	1.02	518.71	499.32	20.74
HUB	6.20	1.07	5.78	527.05	1.02	517.09	499.51	21.74

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	39.12	35.20	31.50	3.70	0.93	0.49	1.40
MEAN	38.94	27.25	23.50	3.75	0.94	0.47	1.62
HUB	42.58	10.27	6.50	3.77	0.94	0.47	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.984	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	353.6455	210.5446	284.1410	1107.2719	0.3194	-0.0918	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.2235	5.8060	517.9789	499.8935	21.3842	36.5379	32.4000	-4.1379

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	285.6052	64.0529	278.3299	1110.9309	0.2571	0.2749	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.2217	5.9469	521.4172	498.9923	432.2457	0.0145	0.4135

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	283.3154	0.0000	283.3154	1111.0129	0.2550	0.3237	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.9411	521.5079	499.2462	0.0000	0.0600	0.0424	0.2599

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8686	6.2109	1.0744	527.8546	11.7436	210.2118	1.6295

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
74242.852	0.487	107.549	244834.672	0.576494E-02

Melt Ratio at Stator LE, Throat, TE
0.53152E-01 0.95400E-01 0.25276E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.799 EfDer = 0.992 SH = 0.637823E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.634	2370.470	6.211	527.846	1.000	1.000	0.980

W Kg/sec = 11.652 Wdry = 25.471 WH2O = 0.164 lbm/sec H2O = 3.169g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
61.204	2349.825	1.373	0.253	53.555	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49695.906	20063.072	2.834	509.668	179.853	384.739	2.139

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	234.00	-0.08	234.00	0.21	0.40	375.66
MEAN	15.91	0.00	-0.02	234.00	-0.08	234.00	0.21	0.36	
HUB	13.07	0.00	-0.02	234.00	-0.08	234.00	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.31	47.36	10.95	378.97	445.47	6.03	523.53	499.70	21.06
MEAN	54.60	44.80	9.80	329.18	403.94	6.03	523.53	499.70	21.06
HUB	49.13	38.84	10.29	270.37	357.63	6.03	523.53	499.70	21.06

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	315.03	195.97	246.65	1121.46	0.28	2.05	1.78	7.43
MEAN	15.50	313.97	191.86	248.53	1119.65	0.28	2.13	1.86	5.75
HUB	12.59	330.15	215.01	250.53	1117.86	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	371.11	302.51	175.14	0.27	3517.21	0.92	0.91		
MEAN	320.59	279.89	128.73	0.25	2974.60	0.92	0.91	0.91	1.60
HUB	260.44	254.62	45.43	0.23	2708.07	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.67	1.07	6.32	539.31	1.02	531.48	505.27	17.27
MEAN	6.60	1.06	6.26	537.54	1.02	529.76	504.62	18.11
HUB	6.56	1.06	6.19	536.67	1.02	528.07	504.55	18.97

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.47	35.38	31.50	3.88	0.93	0.48	1.40
MEAN	37.67	27.38	23.50	3.88	0.94	0.45	1.64
HUB	40.64	10.28	6.50	3.78	0.94	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	343.6885	195.3747	282.7553	1118.2949	0.3073	-0.1719	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.6058	6.1945	528.5186	505.2244	18.8082	34.6432	33.0000	-1.6432

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   289.1965    66.0383   281.5556  1121.1503     0.2579     0.1529     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6041     6.3101   531.2265   504.4627   410.5396     0.0247     0.3872

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   281.2939     0.0000   281.2939  1121.4889     0.2508     0.3103     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3222   531.5564   504.5898     0.0000     0.0600     0.0375     0.1867

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8819     6.5996     1.0626   537.7932     9.9943   230.6775     1.7882

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  63393.348       0.460      91.832  257244.875   0.677649E-02

Melt Ratio at Stator LE, Throat, TE
0.77380E+00 0.85744E+00 0.10000E+01
 trTOT =     1.1455   Tt4 =   537.7932   T1  =   469.4966

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    430010.72    622.9186     82.6607      1.5217      0.8352     15.6796      1.1455     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 34281 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.741   EfDer =  0.952    SH =  0.105877E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     27.489    2295.269       4.829     471.207       1.000       1.000       0.980
 W Kg/sec =  12.495  Wdry =  27.460  WH2O = 0.029  lbm/sec   H2O =   0.463g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     79.764    2408.148       1.380       0.249      53.383      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60490.344   21560.418       3.559     831.557     233.626     619.754       2.653

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   174.58    -0.06   174.58     0.17     0.43   433.53
 MEAN    17.06     0.00    -0.02   174.58    -0.06   174.58     0.17     0.36
 HUB     12.51     0.00    -0.02   174.58    -0.06   174.58     0.17     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.10    50.47    16.63   413.22   448.64     4.74   468.76   461.17    24.18
 MEAN    62.94    47.20    15.74   341.71   383.78     4.74   468.76   461.17    24.18
 HUB     55.14    38.62    16.52   250.58   305.45     4.74   468.76   461.17    24.18

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   370.10   285.91   235.02  1065.77      0.35     7.29     6.52    16.04
 MEAN    18.04   374.03   288.77   237.72  1063.04      0.35     7.43     6.80    12.53
 HUB     15.00   404.21   324.17   241.44  1059.70      0.38     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    413.22   267.29   127.31     0.25  5899.50      0.92     0.87
 MEAN   361.26   248.53    72.49     0.23  5209.31      0.92     0.87     0.87     1.77
 HUB    300.45   242.61    23.72     0.23  4863.34      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.47     1.13     5.04   490.16     1.04   479.17   474.86    22.44
 MEAN     5.39     1.12     4.96   487.94     1.04   476.72   473.72    24.53
 HUB      5.35     1.11     4.85   486.83     1.03   473.73   473.50    27.35

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.58    28.44    24.20     4.24     0.93     0.58     1.80
 MEAN    50.54    16.96    12.70     4.26     0.95     0.53     2.22
 HUB     53.32    -5.61    -9.30     3.69     0.95     0.40     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.952       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   384.7662   288.2104   254.9114  1062.6685     0.3621    -0.0357     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.4018     4.9402   476.4522   474.2314    25.6747    48.5084    35.4000   -13.1084

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   254.1482    62.1724   246.4262  1070.0774     0.2375     0.5189     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3908     5.1861   483.1360   473.2521   554.9116     0.0341     0.6101

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   253.0567     0.0000   253.0567  1070.0953     0.2365     0.4851     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.1642   483.1818   473.9717     0.0000     0.0600     0.0880     0.4710
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8112     5.3661     1.1113   488.3076    17.1022   166.6651     1.2920

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 106785.758       0.625     165.885  281496.281   0.185649E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.092   EfDer =  0.958    SH =  0.274638E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     27.489    2295.269       5.366     488.307       1.000       1.000       0.980
 W Kg/sec =  12.495  Wdry =  27.414  WH2O = 0.075  lbm/sec   H2O =   1.275g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.065    2365.620       1.378       0.250      53.437      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57009.676   21546.064       2.756     590.487     214.217     468.502       2.187

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   231.70    -0.08   231.70     0.22     0.44   424.22
 MEAN    18.08     0.00    -0.02   231.70    -0.08   231.70     0.22     0.40
 HUB     15.21     0.00    -0.02   231.70    -0.08   231.70     0.22     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.63    46.36    14.27   411.62   472.42     5.20   484.02   476.29    35.49
 MEAN    57.39    42.30    15.09   362.11   429.96     5.20   484.02   476.29    35.49
 HUB     52.75    37.84    14.91   304.66   382.82     5.20   484.02   476.29    35.49

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2      Cu2      Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   340.96   236.68   245.43  1082.35     0.32     2.33     2.04     9.02
 MEAN    18.01   340.54   233.79   247.60  1080.19     0.32     2.40     2.13     7.35
 HUB     15.22   360.77   260.08   250.02  1078.07     0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    409.01   299.90   172.34     0.28  4834.56     0.92     0.88
 MEAN   360.74   278.25   126.95     0.26  4212.05     0.92     0.88     0.88     1.70
 HUB    304.92   254.01    44.83     0.24  3960.47     0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.93     1.10     5.54   503.76     1.03   494.48   485.56    26.10
 MEAN     5.85     1.09     5.47   501.77     1.03   492.52   484.63    27.87
 HUB      5.82     1.09     5.40   500.96     1.03   490.58   484.56    29.73

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.96    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN    43.36    27.14    23.50     3.64     0.95     0.52     1.63
 HUB     46.13    10.17     6.50     3.67     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.958       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   364.0579   234.4494   278.5169  1079.1394     0.3374    -0.1071     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8648     5.4271   491.5948   485.2349    28.9886    40.0899    30.6000    -9.4899

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   270.3129    57.3083   264.1682  1084.3232     0.2493     0.3661     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8594     5.6152   496.3359   484.1261   491.5697     0.0237     0.4617

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   280.0453     0.0000   280.0453  1083.8407     0.2584     0.3530     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5816	495.9100	484.5424	0.0000	0.0600	0.0655	0.2822

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8313	5.8426	1.0888	502.1604	13.8540	188.8329	1.4638

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
86901.203	0.519	134.996	256474.984	0.311834E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.886 EfDer = 0.974 SH = 0.363594E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.489	2295.269	5.843	502.160	1.000	1.000	0.980

W Kg/sec = 12.495 Wdry = 27.389 WH2O = 0.100 lbm/sec H2O = 1.786g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.051	2332.762	1.377	0.251	53.466	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53898.582	21538.469	2.732	545.479	199.637	424.468	2.126

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	237.13	-0.08	237.13	0.22	0.43	408.56
MEAN	17.74	0.00	-0.02	237.13	-0.08	237.13	0.22	0.39	
HUB	15.05	0.00	-0.02	237.13	-0.08	237.13	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.47	46.36	13.11	402.00	466.80	5.65	497.69	485.32	29.39
MEAN	56.29	43.40	12.89	355.30	427.23	5.65	497.69	485.32	29.39
HUB	51.82	38.84	12.98	301.45	383.61	5.65	497.69	485.32	29.39

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	333.86	220.16	250.98	1095.99	0.30	2.26	1.98	8.75
MEAN	17.51	335.58	220.57	252.90	1094.17	0.31	2.34	2.07	6.78
HUB	14.85	358.01	251.26	255.03	1092.38	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	396.79	306.91	176.63	0.28	4363.00	0.92	0.89		
MEAN	350.66	284.40	130.09	0.26	3862.84	0.92	0.89	0.89	1.65
HUB	297.45	259.18	46.18	0.24	3732.47	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.39	1.09	6.00	516.06	1.03	507.20	493.18	22.87
MEAN	6.32	1.08	5.93	514.47	1.02	505.51	492.53	24.11
HUB	6.31	1.08	5.86	514.05	1.02	503.86	492.70	25.37

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.26	35.14	31.50	3.64	0.93	0.51	1.40
MEAN	41.09	27.22	23.50	3.72	0.94	0.49	1.62
HUB	44.57	10.26	6.50	3.76	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.974	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	360.5222	222.0157	284.0515	1093.0642	0.3298	-0.1163	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3347	5.8822	504.5296	493.1638	25.0770	38.0113	31.5000	-6.5113

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	280.2894	61.1432	273.5392	1097.4751	0.2554	0.3083	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3314	6.0551	508.6167	492.1709	451.3937	0.0179	0.4311

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	284.9411	0.0000	284.9411	1097.2352	0.2597	0.3338	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.0332	508.4089	492.5671	0.0000	0.0600	0.0508	0.2548

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8543	6.3180	1.0814	514.8604	12.7008	195.5413	1.5158

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
79904.367	0.508	124.127	255831.719	0.411730E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.092 EfDer = 0.986 SH = 0.478089E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.489	2295.269	6.318	514.860	1.000	1.000	0.980

W Kg/sec = 12.495 Wdry = 27.358 WH2O = 0.131 lbm/sec H2O = 2.476g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
63.722	2303.812	1.375	0.252	53.503	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51129.152	21528.662	2.744	513.330	187.069	395.845	2.116

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	239.03	-0.08	239.03	0.22	0.41	387.20
MEAN	16.97	0.00	-0.02	239.03	-0.08	239.03	0.22	0.38	
HUB	14.32	0.00	-0.02	239.03	-0.08	239.03	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.22	46.36	11.86	385.78	453.90	6.12	510.33	493.41	25.79
MEAN	54.89	43.80	11.09	339.92	415.62	6.12	510.33	493.41	25.79
HUB	50.20	37.84	12.36	286.83	373.44	6.12	510.33	493.41	25.79

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	322.06	200.45	252.07	1108.10	0.29	2.16	1.89	8.34
MEAN	16.57	323.92	201.26	253.81	1106.48	0.29	2.24	1.97	6.35
HUB	13.89	345.23	231.95	255.71	1104.88	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	378.17	308.42	177.71	0.28	3786.17	0.92	0.90		
MEAN	331.97	285.49	130.71	0.26	3337.06	0.92	0.90	0.90	1.59
HUB	278.22	259.86	46.27	0.24	3222.96	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.82	1.08	6.44	526.88	1.02	518.66	499.89	21.09
MEAN	6.76	1.07	6.37	525.45	1.02	517.14	499.35	22.05
HUB	6.74	1.07	6.31	525.09	1.02	515.65	499.54	23.03

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.49	35.18	31.50	3.68	0.93	0.48	1.40
MEAN	38.41	27.25	23.50	3.75	0.94	0.46	1.62
HUB	42.21	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.986	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	344.0670	202.3920	278.2438	1105.6730	0.3112	-0.0931	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7696	6.3374	516.4313	499.8889	22.7057	36.0318	32.4000	-3.6318

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	280.0479	62.8066	272.9142	1109.0441	0.2525	0.2640	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7681	6.4793	519.5931	499.0803	432.2457	0.0137	0.4048

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	277.7711	0.0000	277.7711	1109.1241	0.2504	0.3153	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.4737	519.6812	499.3092	0.0000	0.0600	0.0411	0.2499

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8708	6.7572	1.0695	525.7897	10.9490	212.2955	1.6457

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
69134.023	0.483	107.396	262697.656	0.528939E-02

Melt Ratio at Stator LE, Throat, TE
0.64838E-01 0.10860E+00 0.26521E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.452 EfDer = 0.994 SH = 0.582199E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.489	2295.269	6.757	525.782	1.000	1.000	0.980

W Kg/sec = 12.495 Wdry = 27.329 WH2O = 0.160 lbm/sec H2O = 3.163g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
60.209	2279.742	1.374	0.253	53.537	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
48738.734	21519.717	2.882	509.668	176.872	384.739	2.175

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	229.50	-0.08	229.50	0.21	0.39	364.46
MEAN	15.91	0.00	-0.02	229.50	-0.08	229.50	0.21	0.35	
HUB	13.07	0.00	-0.02	229.50	-0.08	229.50	0.21	0.31	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.98	47.36	10.62	366.95	432.87	6.56	521.62	499.71	22.39
MEAN	54.25	44.80	9.45	318.74	392.83	6.56	521.62	499.71	22.39
HUB	48.77	38.84	9.93	261.79	348.20	6.56	521.62	499.71	22.39

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	306.32	187.21	242.46	1118.90	0.27	2.05	1.78	7.43
MEAN	15.50	305.69	183.94	244.16	1117.23	0.27	2.13	1.86	5.75
HUB	12.59	321.89	207.63	245.98	1115.59	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	359.34	297.34	172.12	0.27	3360.08	0.92	0.91		
MEAN	310.42	274.97	126.47	0.25	2851.92	0.92	0.91	0.91	1.58
HUB	252.18	249.98	44.55	0.22	2615.04	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.22	1.07	6.86	536.40	1.02	528.99	505.04	18.61
MEAN	7.15	1.06	6.80	534.79	1.02	527.41	504.42	19.45
HUB	7.12	1.05	6.73	534.05	1.02	525.86	504.37	20.31

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.67	35.37	31.50	3.87	0.93	0.47	1.40
MEAN	36.99	27.38	23.50	3.88	0.94	0.44	1.64
HUB	40.17	10.27	6.50	3.77	0.94	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	334.9733	187.3151	277.7051	1115.9290	0.3002	-0.1743	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.1578	6.7317	526.2108	504.9967	20.1803	34.0001	33.0000	-1.0001

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   284.3516    64.9319   276.8387  1118.5348     0.2542     0.1380     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.1564     6.8466   528.6760   504.3201   410.5396     0.0238     0.3766

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   276.5930     0.0000   276.5930  1118.8613     0.2472     0.2992     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.8592   528.9933   504.4160     0.0000     0.0600     0.0369     0.1723

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8835     7.1516     1.0584   535.0335     9.2994   233.7747     1.8122

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  58887.539       0.456      91.478  276360.844   0.616154E-02

Melt Ratio at Stator LE, Throat, TE
0.76815E+00 0.84830E+00 0.10000E+01
 trTOT =     1.1355   Tt4 =   535.0335   T1  =   471.2066

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    401612.91    623.8813     79.7643      1.4811      0.8367     15.7413      1.1355     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 30029 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =14.287   EfDer =  0.964    SH =  0.135445E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     31.344    2167.876       5.592     480.735       1.000       1.000       0.980
  W Kg/sec =  14.247  Wdry =  31.302  WH2O = 0.042  lbm/sec   H2O =   0.673g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     79.320    2251.842       1.380       0.249      53.392      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60760.598   24581.279       3.579     831.557     232.374     619.754       2.667

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   175.36    -0.06   175.36     0.16     0.40   405.39
 MEAN    17.06     0.00    -0.02   175.36    -0.06   175.36     0.16     0.35
 HUB     12.51     0.00    -0.02   175.36    -0.06   175.36     0.16     0.28

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.81    50.47    15.34   390.28   427.93      5.49   478.27   468.78    23.59
 MEAN    61.49    47.20    14.29   322.75   367.37      5.49   478.27   468.78    23.59
 HUB     53.47    38.62    14.85   236.67   294.61      5.49   478.27   468.78    23.59

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   353.70   262.21   237.39  1074.48      0.33     7.29     6.52    16.04
 MEAN    18.04   359.98   268.54   239.72  1072.18      0.34     7.43     6.80    12.53
 HUB     15.00   392.31   307.96   243.04  1069.28      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    390.28   269.73   128.08     0.25  5410.55      0.92     0.88
 MEAN   341.21   250.50    72.67     0.23  4844.46      0.92     0.88     0.88     1.68
 HUB    283.77   244.24    24.18     0.23  4620.13      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.23     1.11     5.78   497.13     1.03   487.11   480.57    22.80
 MEAN     6.16     1.10     5.70   495.42     1.03   485.04   479.75    24.49
 HUB      6.13     1.10     5.60   494.74     1.03   482.41   479.81    26.83

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     47.84    28.35    24.20     4.15     0.93     0.54     1.80
 MEAN    48.25    16.86    12.70     4.16     0.95     0.49     2.22
 HUB     51.72    -5.68    -9.30     3.62     0.95     0.36     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.964       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   371.3857   268.0204   257.0844  1071.7626     0.3465    -0.0410     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.1686     5.6837   484.7290   480.2675    25.6031    46.1931    35.4000   -10.7931

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   257.6035    63.0177   249.7766  1078.0563     0.2390     0.4791     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.1603     5.9237   490.4541   479.3762   554.9116     0.0272     0.5681

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   256.2263     0.0000   256.2263  1078.0920     0.2377     0.4566     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9051   490.5121   480.0892     0.0000     0.0600     0.0732     0.4401
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8290     6.1383     1.0976   495.7607    15.0271   173.6784     1.3463

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  93944.297       0.617     166.404  316160.031   0.222594E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =13.259   EfDer =  0.972    SH =  0.317227E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.344    2167.876       6.138     495.760       1.000       1.000       0.980
 W Kg/sec =  14.247  Wdry =  31.245  WH2O = 0.099  lbm/sec   H2O =   1.659g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.385    2217.464       1.377       0.251      53.451      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57723.516   24563.631       2.744     590.487     215.218     468.502       2.177

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   234.60    -0.08   234.60     0.22     0.42   397.65
 MEAN    18.08     0.00    -0.02   234.60    -0.08   234.60     0.22     0.38
 HUB     15.21     0.00    -0.02   234.60    -0.08   234.60     0.22     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.90    46.36    12.54   388.77   454.14     5.94   491.38   482.40    34.65
 MEAN    55.56    42.30    13.26   342.01   414.80     5.94   491.38   482.40    34.65
 HUB     50.82    37.84    12.98   287.75   371.32     5.94   491.38   482.40    34.65

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   327.20   211.18   249.93  1088.52      0.30     2.33     2.04     9.02
 MEAN    18.01   329.09   211.95   251.75  1086.79      0.30     2.40     2.13     7.35
 HUB     15.22   351.13   242.67   253.79  1085.08      0.32     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    386.31   305.18   175.13     0.28  4313.95      0.92     0.89
 MEAN   340.72   282.77   128.77     0.26  3818.65      0.92     0.89     0.89     1.61
 HUB    287.99   257.80    45.33     0.24  3695.35      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.68     1.09     6.28   508.76     1.03   500.23   490.14    27.12
 MEAN     6.61     1.08     6.21   507.27     1.02   498.64   489.48    28.56
 HUB      6.60     1.07     6.14   506.90     1.02   497.08   489.65    30.03

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     40.20    35.02    31.50     3.52     0.93     0.49     1.40
 MEAN    40.09    27.09    23.50     3.59     0.94     0.47     1.63
 HUB     43.72    10.13     6.50     3.63     0.94     0.47     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.972       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   354.1158   212.5438   283.2368  1085.6758     0.3262    -0.1204     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6253     6.1618   497.6593   490.1074    29.7166    36.8849    30.6000    -6.2849

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   276.0389    58.5222   269.7641  1089.9338     0.2533     0.3030     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6222     6.3378   501.5762   489.1510   491.5697     0.0174     0.4083

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   285.7518     0.0000   285.7518  1089.4481     0.2623     0.3086     0.5911
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   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3048   501.1429   489.5724     0.0000     0.0600     0.0498     0.2243

    STAGE EXIT CONDITIONS, STAGE            2
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8517     6.6086     1.0766   507.6412    11.8817   201.1550     1.5593

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  74637.563       0.500     132.206  289272.375   0.355671E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   3
  BLEED =  0.000   DPInc =10.822   EfDer =  0.987    SH =  0.407557E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.344    2167.876       6.609     507.641       1.000       1.000       0.980
 W Kg/sec =  14.247  Wdry =  31.217  WH2O = 0.128  lbm/sec   H2O =   2.238g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     68.974    2191.362       1.376       0.251      53.480      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*         AthrRotor  ChokeMargin
  54980.281   24554.824       2.695     545.479     202.403     424.468       2.097

ROTOR LEADING EDGE CONDITIONS, STAGE   3

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.07     0.00    -0.02   241.89    -0.08   241.89     0.22     0.41   383.79
 MEAN    17.74     0.00    -0.02   241.89    -0.08   241.89     0.22     0.38
 HUB     15.05     0.00    -0.02   241.89    -0.08   241.89     0.22     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.51    46.36    11.15   379.69   450.27     6.39   502.99   490.26    30.29
 MEAN    54.22    43.40    10.82   335.58   413.74     6.39   502.99   490.26    30.29
 HUB     49.66    38.84    10.82   284.72   373.66     6.39   502.99   490.26    30.29

ROTOR EXIT CONDITIONS, STAGE   3    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     19.81   322.21   193.68   257.50  1099.92     0.29     2.26     1.98     8.75
 MEAN    17.51   326.09   198.02   259.08  1098.51     0.30     2.34     2.07     6.78
 HUB     14.85   350.24   233.75   260.82  1097.13     0.32     2.38     2.20     4.28

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    374.77   314.81   181.09     0.29  3838.45     0.92     0.90
 MEAN   331.19   291.30   133.17     0.27  3468.21     0.92     0.90     0.90     1.55
 HUB    280.94   265.06    47.19     0.24  3472.46     0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.12     1.08     6.71   519.18     1.02   510.93   496.83    24.83
 MEAN     7.07     1.07     6.66   518.06     1.02   509.62   496.42    25.84
 HUB      7.07     1.07     6.59   518.08     1.02   508.33   496.81    26.86

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     36.95    35.12    31.50     3.62     0.93     0.45     1.40
 MEAN    37.39    27.20    23.50     3.70     0.94     0.44     1.62
 HUB     41.87    10.25     6.50     3.75     0.94     0.45     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.987       0.550      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.3924   352.7761   199.3241   291.0685  1097.3291     0.3215    -0.1307     2.2836

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.0809     6.5995   508.5603   497.0834    26.9094    34.4034    31.5000    -2.9034

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.3924   288.3776    62.9076   281.4325  1100.8528     0.2620     0.2331     2.3726

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.0794     6.7550   511.8381   496.2502   451.3937     0.0136     0.3727
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VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	293.0071	0.0000	293.0071	1100.6106	0.2662	0.2796	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7341	511.6257	496.6373	0.0000	0.0600	0.0395	0.1845

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8709	7.0682	1.0695	518.4379	10.7975	210.4616	1.6315

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
68026.625	0.484	120.496	289629.094	0.454860E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.786 EfDer = 0.996 SH = 0.512955E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.344	2167.876	7.068	518.436	1.000	1.000	0.980

W Kg/sec = 14.247 Wdry = 31.184 WH2O = 0.161 lbm/sec H2O = 2.947g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.171	2168.424	1.375	0.252	53.515	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52545.199	24544.520	2.682	513.330	191.369	395.845	2.068

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	245.66	-0.08	245.66	0.22	0.40	364.45
MEAN	16.97	0.00	-0.02	245.66	-0.08	245.66	0.22	0.37	
HUB	14.32	0.00	-0.02	245.66	-0.08	245.66	0.22	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	56.02	46.36	9.66	364.37	439.51	6.83	513.66	497.23	27.34
MEAN	52.59	43.80	8.79	321.06	404.33	6.83	513.66	497.23	27.34
HUB	47.81	37.84	9.97	270.91	365.77	6.83	513.66	497.23	27.34

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	312.99	173.44	260.54	1109.98	0.28	2.16	1.89	8.34
MEAN	16.57	317.01	178.58	261.92	1108.76	0.29	2.24	1.97	6.35
HUB	13.89	340.06	215.02	263.45	1107.56	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	357.18	318.81	183.74	0.29	3276.16	0.92	0.91		
MEAN	313.55	294.65	134.97	0.27	2961.18	0.92	0.91	0.91	1.50
HUB	262.78	267.74	47.75	0.24	2987.88	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.53	1.06	7.13	528.24	1.02	520.49	502.49	23.06
MEAN	7.48	1.06	7.08	527.30	1.02	519.34	502.17	23.84
HUB	7.48	1.06	7.02	527.38	1.02	518.22	502.57	24.62

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.65	35.19	31.50	3.69	0.93	0.41	1.40
MEAN	34.29	27.26	23.50	3.76	0.93	0.41	1.62
HUB	39.22	10.27	6.50	3.77	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.996	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	338.7371	179.5834	287.2153	1107.8831	0.3058	-0.1055	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.4928	7.0304	518.5555	502.7080	24.5250	32.0160	32.4000	0.3840

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	290.1814	65.0792	282.7896	1110.4481	0.2613	0.1793	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.4919	7.1499	520.9651	502.0479	432.2457	0.0120	0.3418

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	287.7150	0.0000	287.7150	1110.5341	0.2591	0.2506	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.1463	521.0546	502.1733	0.0000	0.0600	0.0366	0.1708

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8821	7.4815	1.0585	527.6031	9.2047	231.3691	1.7936

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
58172.648	0.456	103.041	298403.813	0.547438E-02

Melt Ratio at Stator LE, Throat, TE
0.33092E+00 0.40280E+00 0.61318E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.936 EfDer = 1.000 SH = 0.581709E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.344	2167.876	7.482	527.592	1.000	1.000	0.980

W Kg/sec = 14.247 Wdry = 31.162 WH2O = 0.182 lbm/sec H2O = 3.482g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.113	2149.508	1.374	0.253	53.537	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50438.504	24537.775	2.793	509.668	182.468	384.739	2.109

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	237.51	-0.08	237.51	0.21	0.38	343.64
MEAN	15.91	0.00	-0.02	237.51	-0.08	237.51	0.21	0.34	
HUB	13.07	0.00	-0.02	237.51	-0.08	237.51	0.21	0.31	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.58	47.36	8.22	346.58	420.22	7.25	523.14	502.19	23.44
MEAN	51.74	44.80	6.94	301.05	383.52	7.25	523.14	502.19	23.44
HUB	46.16	38.84	7.32	247.26	342.91	7.25	523.14	502.19	23.44

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	298.79	160.04	252.31	1119.01	0.27	2.05	1.78	7.43
MEAN	15.50	300.77	161.60	253.67	1117.75	0.27	2.13	1.86	5.75
HUB	12.59	319.16	191.73	255.14	1116.51	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	339.39	309.56	179.35	0.28	2872.64	0.92	0.91		
MEAN	293.19	285.77	131.59	0.26	2505.68	0.92	0.91	0.91	1.48
HUB	238.18	259.34	46.45	0.23	2414.99	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.90	1.06	7.52	536.16	1.02	529.11	506.55	20.19
MEAN	7.84	1.05	7.47	535.07	1.01	527.92	506.15	20.87
HUB	7.83	1.05	7.41	534.80	1.01	526.75	506.31	21.56

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.39	35.41	31.50	3.91	0.93	0.40	1.40
MEAN	32.50	27.42	23.50	3.92	0.93	0.38	1.64
HUB	36.92	10.32	6.50	3.82	0.93	0.38	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	332.2754	164.5608	288.6636	1116.3535	0.2976	-0.1932	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8498	7.3900	526.6219	506.8184	21.8258	29.6865	33.0000	3.3135

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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   296.6311    67.7360   288.7938  1118.2205     0.2653     0.0368     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     7.8475     7.4796   528.3931   506.4100   410.5396     0.0257     0.3107

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   288.5698     0.0000   288.5698  1118.6017     0.2580     0.2252     0.5109

Blockage4   Ps4       Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     7.4935   528.7667   506.6783     0.0000     0.0600     0.0404     0.0724

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4       Tt2avg      Del T     Ns          Ns nondim
 0.8761     7.8418     1.0482   535.3401     7.7498   257.5280     1.9963

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  49073.984       0.426      86.925  314762.688   0.629764E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.1136   Tt4 =   535.3401   T1  =   480.7346

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    343855.13    609.0708     79.3201      1.4022      0.8515     14.2872      1.1136     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 25666 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.489   EfDer =  0.994    SH =  0.168076E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     39.395    1982.604       6.513     491.410       1.000       1.000       0.980
  W Kg/sec =  17.907  Wdry =  39.329  WH2O = 0.066  lbm/sec   H2O =   0.949g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     86.548    2036.905       1.379       0.250      53.403      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  67223.016   30890.998       3.279     831.557     253.608     619.754       2.444

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
  TIP     20.63     0.00    -0.02   194.02    -0.07   194.02     0.18     0.38   366.69
  MEAN    17.06     0.00    -0.02   194.02    -0.07   194.02     0.18     0.33
  HUB     12.51     0.00    -0.02   194.02    -0.07   194.02     0.18     0.27

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
  TIP     61.48    50.47    11.01   356.93   406.31     6.37   488.40   476.92    22.21
  MEAN    56.69    47.20     9.49   295.17   353.28     6.37   488.40   476.92    22.21
  HUB     48.14    38.62     9.52   216.44   290.72     6.37   488.40   476.92    22.21

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
  TIP     20.63   341.08   214.34   265.32  1082.33      0.32     7.29     6.52    16.04
  MEAN    18.04   353.50   231.48   267.16  1080.83      0.33     7.43     6.80    12.53
  HUB     15.00   393.97   286.71   270.21  1078.55      0.37     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
  TIP    356.93   301.21   142.59     0.28  4423.17      0.92     0.91
  MEAN   312.05   279.04    80.57     0.26  4176.20      0.92     0.91     0.91     1.43
  HUB    259.52   271.57    27.19     0.25  4301.51      0.92     0.91

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
  TIP      7.07     1.08     6.60   503.66     1.02   494.35   485.98    23.23
  MEAN     7.03     1.08     6.54   502.97     1.02   492.97   485.79    24.31
  HUB      7.05     1.08     6.44   503.32     1.02   490.90   486.50    26.02

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
  TIP     38.93    28.25    24.20     4.05     0.93     0.41     1.80
  MEAN    40.91    16.78    12.70     4.08     0.94     0.36     2.22
  HUB     46.70    -5.75    -9.30     3.55     0.94     0.24     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.994       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   368.2548   231.0347   286.7657  1080.2045     0.3409    -0.0585     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     7.0446     6.5080   492.4814   486.3529    25.5052    38.8569    35.4000    -3.4569

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   289.6321    70.8528   280.8320  1084.7122     0.2670     0.3445     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     7.0421     6.7066   496.6146   485.6950   554.9116     0.0149     0.4435

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   287.5458     0.0000   287.5458  1084.7971     0.2651     0.3550     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     6.6985   496.7125   486.3457     0.0000     0.0600     0.0407     0.3290
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8722     7.0286     1.0792   503.3145    11.9048   198.7706     1.5409

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  74518.000       0.585     165.896  391971.156   0.256748E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.655   EfDer =  0.999    SH =  0.346885E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     39.395    1982.604       7.029     503.314       1.000       1.000       0.980
 W Kg/sec =  17.907  Wdry =  39.259  WH2O = 0.137  lbm/sec   H2O =   2.034g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     81.163    2012.679       1.377       0.251      53.461      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64700.176   30869.160       2.480     590.487     238.075     468.502       1.968

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   262.95    -0.09   262.95     0.24     0.41   360.93
 MEAN    18.08     0.00    -0.02   262.95    -0.09   262.95     0.24     0.38
 HUB     15.21     0.00    -0.02   262.95    -0.09   262.95     0.24     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.52    46.36     7.16   355.55   442.29     6.75   497.81   488.41    33.31
 MEAN    49.95    42.30     7.65   312.78   408.70     6.75   497.81   488.41    33.31
 HUB     45.03    37.84     7.19   263.16   372.08     6.75   497.81   488.41    33.31

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   322.74   154.74   283.22  1092.24      0.30     2.33     2.04     9.02
 MEAN    18.01   329.25   165.99   284.35  1091.36      0.30     2.40     2.13     7.35
 HUB     15.22   355.83   212.17   285.65  1090.51      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    353.30   345.89   198.56     0.32  3161.57      0.92     0.91
 MEAN   311.60   319.47   145.61     0.29  2991.07      0.92     0.91     0.91     1.39
 HUB    263.38   290.20    51.21     0.27  3231.22      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.44     1.06     7.01   512.02     1.02   503.73   493.68    28.78
 MEAN     7.42     1.06     6.97   511.55     1.02   502.92   493.56    29.52
 HUB      7.45     1.06     6.93   512.21     1.02   502.14   494.28    30.24

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.65    35.03    31.50     3.53     0.93     0.34     1.40
 MEAN    30.27    27.12    23.50     3.62     0.93     0.34     1.63
 HUB     36.60    10.16     6.50     3.66     0.93     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   361.1809   166.4536   320.5384  1089.8412     0.3314    -0.1615     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.4339     6.8980   501.5515   494.3139    31.0636    27.4426    30.6000     3.1574

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   314.7113    66.7210   307.5573  1092.5479     0.2881     0.1080     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4320     7.0225   504.0499   493.6842   491.5697     0.0142     0.2631

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   325.8722     0.0000   325.8722  1091.9224     0.2984     0.1573     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9823	503.4825	494.1145	0.0000	0.0600	0.0400	0.0218

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8726	7.4199	1.0557	511.9257	8.6120	247.7512	1.9206

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
54152.047	0.434	120.556	361563.719	0.382118E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.747 EfDer = 0.996 SH = 0.426654E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.395	1982.604	7.420	511.925	1.000	1.000	0.980

W Kg/sec = 17.907 Wdry = 39.227 WH2O = 0.168 lbm/sec H2O = 2.590g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
77.536	1995.679	1.376	0.252	53.487	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62504.668	30859.379	2.397	545.479	227.560	424.468	1.865

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	275.00	-0.09	275.00	0.25	0.40	349.52
MEAN	17.74	0.00	-0.02	275.00	-0.09	275.00	0.25	0.38	
HUB	15.05	0.00	-0.02	275.00	-0.09	275.00	0.25	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.63	46.36	5.27	347.24	443.02	7.11	505.92	494.45	31.55
MEAN	48.15	43.40	4.75	306.90	412.15	7.11	505.92	494.45	31.55
HUB	43.45	38.84	4.61	260.39	378.78	7.11	505.92	494.45	31.55

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	325.19	133.53	296.51	1099.74	0.30	2.26	1.98	8.75
MEAN	17.51	332.66	149.41	297.22	1099.23	0.30	2.34	2.07	6.78
HUB	14.85	360.30	202.33	298.12	1098.74	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	342.74	362.89	209.21	0.33	2647.11	0.92	0.91		
MEAN	302.89	334.51	153.48	0.30	2617.26	0.92	0.91	0.91	1.33
HUB	256.93	303.08	54.59	0.28	3006.06	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.78	1.05	7.33	519.20	1.01	510.80	498.77	28.25
MEAN	7.77	1.05	7.30	519.11	1.01	510.33	498.86	28.65
HUB	7.83	1.05	7.27	520.18	1.02	509.88	499.78	29.02

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	24.24	35.21	31.50	3.71	0.93	0.29	1.40
MEAN	26.69	27.31	23.50	3.81	0.92	0.30	1.62
HUB	34.16	10.38	6.50	3.88	0.92	0.34	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.996	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	366.9479	150.3859	334.7160	1097.5598	0.3343	-0.1741	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.7878	7.2172	508.8148	499.6891	30.2160	24.1941	31.5000	7.3059

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	334.2776	72.9204	326.2271	1099.5139	0.3040	0.0128	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.7831	7.3077	510.6325	499.2030	451.3937	0.0194	0.2208

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	340.0169	0.0000	340.0169	1099.1719	0.3093	0.1024	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.2756	510.3236	499.5248	0.0000	0.0600	0.0543	-0.0524

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8470	7.7660	1.0466	519.4925	7.5714	267.7031	2.0752

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
47728.590	0.406	106.256	364297.156	0.464487E-02

Melt Ratio at Stator LE, Throat, TE
0.10230E-01 0.17690E-01 0.60035E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 2.172 EfDer = 0.978 SH = 0.505059E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.395	1982.604	7.766	519.489	1.000	1.000	0.980

W Kg/sec = 17.907 Wdry = 39.196 WH2O = 0.199 lbm/sec H2O = 3.156g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
74.627	1981.091	1.375	0.252	53.512	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60727.289	30849.740	2.343	513.330	219.126	395.845	1.806

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	283.91	-0.10	283.91	0.26	0.40	332.96
MEAN	16.97	0.00	-0.02	283.91	-0.10	283.91	0.26	0.37	
HUB	14.32	0.00	-0.02	283.91	-0.10	283.91	0.26	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.58	46.36	3.22	333.23	437.85	7.42	513.11	499.53	29.84
MEAN	45.97	43.80	2.17	293.62	408.50	7.42	513.11	499.53	29.84
HUB	41.12	37.84	3.28	247.76	376.88	7.42	513.11	499.53	29.84

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	324.62	110.13	305.37	1106.08	0.29	2.16	1.89	8.34
MEAN	16.57	331.51	128.08	305.77	1105.82	0.30	2.24	1.97	6.35
HUB	13.89	357.28	183.78	306.40	1105.58	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	326.65	374.34	216.53	0.34	2081.08	0.92	0.89		
MEAN	286.75	344.49	158.68	0.31	2124.38	0.92	0.89	0.89	1.27
HUB	240.32	311.57	56.54	0.28	2554.08	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.05	1.04	7.59	525.18	1.01	516.84	502.78	27.32
MEAN	8.06	1.04	7.58	525.30	1.01	516.60	502.94	27.51
HUB	8.11	1.04	7.56	526.48	1.01	516.37	503.86	27.67

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	19.83	35.34	31.50	3.84	0.93	0.23	1.40
MEAN	22.73	27.43	23.50	3.93	0.91	0.25	1.62
HUB	30.96	10.46	6.50	3.96	0.91	0.30	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.978	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	359.8881	128.7966	336.0519	1104.5126	0.3258	-0.1422	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0679	7.5055	515.3987	503.6225	28.6068	20.9700	32.4000	11.4300

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	342.3465	76.7783	333.6259	1105.5490	0.3097	-0.0509	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.0595	7.5493	516.3688	503.3405	432.2457	0.0269	0.1843

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	340.0002	0.0000	340.0002	1105.6613	0.3075	0.0492	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.5332	516.4789	503.3973	0.0000	0.0600	0.0771	-0.0832

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7874	8.0345	1.0346	525.6272	6.1666	307.2637	2.3819

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
38959.824	0.365	86.735	377575.625	0.530733E-02

Melt Ratio at Stator LE, Throat, TE
0.39206E+00 0.44463E+00 0.59554E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-0.206 EfDer = 0.947 SH = 0.557108E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.395	1982.604	8.035	525.618	1.000	1.000	0.980

W Kg/sec = 17.907 Wdry = 39.176 WH2O = 0.219 lbm/sec H2O = 3.563g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.557	1969.497	1.374	0.253	53.529	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
59324.609	30843.330	2.391	509.668	213.122	384.739	1.805

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	279.35	-0.10	279.35	0.25	0.38	314.86
MEAN	15.91	0.00	-0.02	279.35	-0.10	279.35	0.25	0.35	
HUB	13.07	0.00	-0.02	279.35	-0.10	279.35	0.25	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	48.62	47.36	1.26	316.96	422.57	7.69	519.45	502.98	27.13
MEAN	44.59	44.80	-0.21	275.32	392.29	7.69	519.45	502.98	27.13
HUB	39.00	38.84	0.16	226.13	359.47	7.69	519.45	502.98	27.13

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	315.70	94.80	301.13	1111.91	0.28	2.05	1.78	7.43
MEAN	15.50	321.05	110.26	301.52	1111.64	0.29	2.13	1.86	5.75
HUB	12.59	342.62	161.56	302.14	1111.38	0.31	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	310.39	370.35	215.59	0.33	1702.49	0.92	0.87		
MEAN	268.13	340.34	157.87	0.31	1710.36	0.92	0.87	0.87	1.25
HUB	217.83	307.33	56.27	0.28	2035.26	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.26	1.03	7.82	530.26	1.01	522.38	505.52	25.22
MEAN	8.26	1.03	7.81	530.28	1.01	522.14	505.62	25.40
HUB	8.31	1.03	7.79	531.17	1.01	521.89	506.32	25.55

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	17.47	35.60	31.50	4.10	0.93	0.20	1.40
MEAN	20.09	27.64	23.50	4.14	0.90	0.22	1.64
HUB	28.13	10.55	6.50	4.05	0.90	0.25	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.947	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	362.1640	112.2859	344.3177	1109.5616	0.3264	-0.2459	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2686	7.6905	520.1980	506.4580	26.8891	18.0617	33.0000	14.9383

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   357.4572    81.6256   348.0128  1109.8452     0.3221    -0.2588     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.2449     7.6825   520.4641   506.3932   410.5396     0.0701     0.1520

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   347.7498     0.0000   347.7498  1110.4167     0.3132     0.0148     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.6991   521.0057   506.4770     0.0000     0.0600     0.1002    -0.2237

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.7002     8.2307     1.0244   530.5620     4.9547   357.4706     2.7711

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  31348.420       0.325      69.790  400188.813   0.585908E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.0797   Tt4 =   530.5620   T1  =   491.4104

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    246706.89    549.2332     86.5482      1.2638      0.8286      9.4886     1.0797     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 20047 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.949   EfDer =  0.999    SH =  0.231821E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     48.390    1807.241       7.939     506.408       1.000       1.000       0.980
  W Kg/sec =  21.996  Wdry =  48.278  WH2O = 0.112  lbm/sec   H2O =   1.546g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     88.532    1829.042       1.378       0.250      53.423      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  69888.047   37934.949       3.204     831.557     259.531     619.754       2.388

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   201.71    -0.07   201.71     0.18     0.35   329.27
 MEAN    17.06     0.00    -0.02   201.71    -0.07   201.71     0.18     0.31
 HUB     12.51     0.00    -0.02   201.71    -0.07   201.71     0.18     0.26

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.21     50.47     7.74   325.36   382.87     7.76   503.16   488.04    20.78
 MEAN    53.15     47.20     5.95   269.06   336.33     7.76   503.16   488.04    20.78
 HUB     44.38     38.62     5.76   197.30   282.20     7.76   503.16   488.04    20.78

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.23   175.41   278.61  1095.80      0.30     7.29     6.52    16.04
 MEAN    18.04   343.83   199.82   279.80  1094.91      0.31     7.43     6.80    12.53
 HUB     15.00   387.04   264.77   282.31  1093.18      0.35     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    325.36   316.40   149.94     0.29  3620.23      0.92     0.91
 MEAN   284.45   292.32    84.63     0.27  3605.19      0.92     0.91     0.91     1.29
 HUB    236.57   283.71    28.20     0.26  3972.35      0.92     0.91

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP       8.43     1.06     7.92   515.52     1.02   506.87   495.14    23.03
 MEAN      8.42     1.06     7.88   515.49     1.02   506.05   495.31    23.61
 HUB       8.47     1.07     7.78   516.41     1.02   504.45   496.35    24.79

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      32.19    28.29    24.20     4.09     0.93     0.30     1.80
 MEAN     35.53    16.83    12.70     4.13     0.92     0.27     2.22
 HUB      43.16    -5.70    -9.30     3.60     0.92     0.16     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   360.6538   199.4344   300.4948  1094.1565     0.3296    -0.0723     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     8.4352     7.8330   505.4413   495.9193    24.8086    33.5717    35.4000     1.8283

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   305.5260    74.7410   296.2430  1097.3046     0.2784     0.2386     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     8.4333     7.9979   508.3699   495.4578   554.9116     0.0133     0.3569

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   303.2363     0.0000   303.2363  1097.4059     0.2763     0.2621     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     7.9909   508.4830   496.1304     0.0000     0.0600     0.0378     0.2264
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8730     8.4191     1.0605   515.8066     9.3989   220.1721     1.7068

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  58976.383       0.557     161.276  471293.594   0.337813E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.519   EfDer =  0.989    SH =  0.437736E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     48.390    1807.241       8.419     515.802       1.000       1.000       0.980
 W Kg/sec =  21.996  Wdry =  48.179  WH2O = 0.212  lbm/sec   H2O =   2.991g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     84.255    1812.303       1.376       0.252      53.490      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68199.953   37903.984       2.388     590.487     247.290     468.502       1.895

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   277.17    -0.10   277.17     0.25     0.39   325.00
 MEAN    18.08     0.00    -0.02   277.17    -0.10   277.17     0.25     0.36
 HUB     15.21     0.00    -0.02   277.17    -0.10   277.17     0.25     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.47    46.36     3.11   324.10   426.53     8.06   509.71   498.15    31.85
 MEAN    45.82    42.30     3.52   285.11   397.71     8.06   509.71   498.15    31.85
 HUB     40.89    37.84     3.05   239.88   366.62     8.06   509.71   498.15    31.85

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   321.29   109.66   301.99  1102.29      0.29     2.33     2.04     9.02
 MEAN    18.01   328.52   128.57   302.32  1102.09      0.30     2.40     2.13     7.35
 HUB     15.22   354.97   185.17   302.84  1101.90      0.32     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    322.05   369.20   212.39     0.33  2241.21      0.92     0.91
 MEAN   284.04   339.95   155.47     0.31  2317.24      0.92     0.91     0.91     1.26
 HUB    240.08   307.78    54.92     0.28  2820.24      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.73     1.04     8.23   521.41     1.01   513.22   501.57    29.49
 MEAN     8.74     1.04     8.22   521.60     1.01   513.03   501.76    29.65
 HUB      8.81     1.05     8.21   522.85     1.01   512.86   502.74    29.78

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     19.96    35.12    31.50     3.62     0.93     0.23     1.40
 MEAN    23.04    27.21    23.50     3.71     0.92     0.24     1.63
 HUB     31.44    10.28     6.50     3.78     0.92     0.29     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.989       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   364.7443   128.9297   341.1972  1100.3076     0.3315    -0.1912     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.7514     8.1206   511.3979   502.5922    31.2876    20.7003    30.6000     9.8997

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   336.9402    71.4337   329.2810  1101.9642     0.3058    -0.0333     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.7438     8.2034   512.9413   502.1540   491.5697     0.0241     0.1688

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   349.4140     0.0000   349.4140  1101.2135     0.3173     0.0344     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1423	512.2495	502.5110	0.0000	0.0600	0.0679	-0.1474

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8117	8.7204	1.0358	521.9297	6.1499	297.8423	2.3089

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
38780.395	0.374	106.049	437369.469	0.465806E-02

Melt Ratio at Stator LE, Throat, TE
0.28245E+00 0.32757E+00 0.46066E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 0.159 EfDer = 0.952 SH = 0.493950E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
48.390	1807.241	8.720	521.923	1.000	1.000	0.980

W Kg/sec = 21.996 Wdry = 48.151 WH2O = 0.239 lbm/sec H2O = 3.442g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
81.825	1801.641	1.375	0.252	53.509	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
66890.664	37895.496	2.270	545.479	240.253	424.468	1.767

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	294.30	-0.10	294.30	0.27	0.39	315.54
MEAN	17.74	0.00	-0.02	294.30	-0.10	294.30	0.27	0.37	
HUB	15.05	0.00	-0.02	294.30	-0.10	294.30	0.27	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	47.09	46.36	0.73	316.53	432.28	8.31	515.06	502.25	30.42
MEAN	43.56	43.40	0.16	279.76	406.12	8.31	515.06	502.25	30.42
HUB	38.90	38.84	0.06	237.36	378.15	8.31	515.06	502.25	30.42

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	332.40	84.68	321.43	1106.63	0.30	2.26	1.98	8.75
MEAN	17.51	339.32	109.30	321.23	1106.86	0.31	2.34	2.07	6.78
HUB	14.85	365.65	174.46	321.35	1107.10	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	312.43	393.94	227.75	0.36	1679.51	0.92	0.87		
MEAN	276.10	361.96	166.80	0.33	1915.21	0.92	0.87	0.87	1.20
HUB	234.20	326.86	59.75	0.30	2592.19	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.95	1.03	8.41	526.11	1.01	517.36	504.78	28.87
MEAN	8.98	1.03	8.42	526.70	1.01	517.58	505.14	28.67
HUB	9.07	1.04	8.42	528.39	1.01	517.80	506.30	28.44

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	14.76	35.32	31.50	3.82	0.93	0.16	1.40
MEAN	18.79	27.44	23.50	3.94	0.90	0.19	1.62
HUB	28.50	10.53	6.50	4.03	0.90	0.25	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.952	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	378.7224	110.0138	362.3915	1104.8369	0.3428	-0.2055	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.9924	8.3019	515.6992	506.0461	30.3565	16.8871	31.5000	14.6129

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	364.1768	79.4427	355.4062	1105.7456	0.3293	-0.1392	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.9773	8.3376	516.5479	505.7702	451.3937	0.0360	0.1242

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	371.2444	0.0000	371.2444	1105.2823	0.3359	-0.0304	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.2808	516.1187	505.9771	0.0000	0.0600	0.0980	-0.2371

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.6993	8.9413	1.0253	527.0300	5.1407	337.0226	2.6126

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
32467.641	0.333	88.786	442965.531	0.513358E-02

Melt Ratio at Stator LE, Throat, TE
0.84750E+00 0.89858E+00 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =-2.902 EfDer = 0.896 SH = 0.561168E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
48.390	1807.241	8.941	527.029	1.000	1.000	0.980

W Kg/sec = 21.996 Wdry = 48.119 WH2O = 0.272 lbm/sec H2O = 3.956g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
80.193	1792.902	1.374	0.253	53.530	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
66120.719	37885.324	2.179	513.330	235.554	395.845	1.680

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	309.13	-0.11	309.13	0.28	0.39	301.33
MEAN	16.97	0.00	-0.02	309.13	-0.11	309.13	0.28	0.37	
HUB	14.32	0.00	-0.02	309.13	-0.11	309.13	0.28	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	44.51	46.36	-1.85	303.75	433.46	8.48	519.48	505.89	30.09
MEAN	40.90	43.80	-2.90	267.65	408.96	8.48	519.48	505.89	30.09
HUB	36.16	37.84	-1.68	225.84	382.90	8.48	519.48	505.89	30.09

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	341.82	57.68	336.91	1109.89	0.31	2.16	1.89	8.34
MEAN	16.57	347.07	85.69	336.33	1110.46	0.31	2.24	1.97	6.35
HUB	13.89	370.63	156.01	336.20	1111.02	0.33	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	297.76	413.70	240.08	0.37	1091.12	0.92	0.82		
MEAN	261.39	379.46	175.70	0.34	1422.03	0.92	0.82	0.82	1.15
HUB	219.06	342.06	63.05	0.31	2168.49	0.92	0.82		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.08	1.02	8.51	529.75	1.01	520.51	507.93	30.17
MEAN	9.12	1.02	8.54	530.57	1.01	521.05	508.35	29.68
HUB	9.22	1.03	8.55	532.43	1.01	521.58	509.51	29.17

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	9.72	35.47	31.50	3.97	0.93	0.09	1.40
MEAN	14.29	27.58	23.50	4.08	0.89	0.14	1.62
HUB	24.89	10.62	6.50	4.12	0.89	0.21	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.896	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	380.3008	86.1723	370.4093	1108.7682	0.3430	-0.1688	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1358	8.4339	519.4948	509.2286	31.2434	13.0964	32.4000	19.3036

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	379.7025	85.1562	370.0302	1108.8038	0.3424	-0.1929	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.1133	8.4153	519.5323	509.2596	432.2457	0.0469	0.0876

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	378.0727	0.0000	378.0727	1108.9028	0.3409	-0.0829	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.3757	519.6312	509.3978	0.0000	0.0600	0.1276	-0.2580

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.5034	9.0641	1.0137	530.9192	3.8903	412.2439	3.1957

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
24628.252	0.278	67.348	461567.781	0.603701E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-5.752 EfDer = 0.833 SH = 0.657059E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
48.390	1807.241	9.064	530.918	1.000	1.000	0.980

W Kg/sec = 21.996 Wdry = 48.073 WH2O = 0.318 lbm/sec H2O = 4.659g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
79.398	1786.323	1.373	0.253	53.561	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
65733.000	37870.785	2.184	509.668	233.355	384.739	1.649

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	309.52	-0.11	309.52	0.28	0.38	285.57
MEAN	15.91	0.00	-0.02	309.52	-0.11	309.52	0.28	0.36	
HUB	13.07	0.00	-0.02	309.52	-0.11	309.52	0.28	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	43.04	47.36	-4.32	288.93	423.49	8.60	523.37	509.13	31.13
MEAN	39.05	44.80	-5.75	250.97	398.55	8.60	523.37	509.13	31.13
HUB	33.68	38.84	-5.16	206.13	371.93	8.60	523.37	509.13	31.13

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	340.22	39.70	337.89	1112.99	0.31	2.05	1.78	7.43
MEAN	15.50	343.80	66.57	337.29	1113.63	0.31	2.13	1.86	5.75
HUB	12.59	363.10	134.66	337.21	1114.24	0.33	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	282.93	416.34	243.24	0.37	714.11	0.92	0.76		
MEAN	244.42	381.31	177.84	0.34	1033.38	0.92	0.76	0.76	1.11
HUB	198.56	343.21	63.90	0.31	1696.74	0.92	0.76		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.15	1.01	8.59	532.69	1.00	523.57	510.77	31.91
MEAN	9.19	1.01	8.61	533.49	1.00	524.17	511.13	31.33
HUB	9.27	1.02	8.62	535.14	1.01	524.74	512.11	30.75

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	6.70	35.75	31.50	4.25	0.93	0.05	1.40
MEAN	11.16	27.80	23.50	4.30	0.87	0.09	1.64
HUB	21.77	10.73	6.50	4.23	0.87	0.17	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.833	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	392.4443	67.7910	386.5449	1110.9052	0.3533	-0.2807	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1898	8.4438	521.6422	512.3715	33.8386	9.9472	33.0000	23.0528

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   404.5717    92.3843   393.8825  1110.0923     0.3644    -0.4301     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1371     8.3503   520.8829   512.6508   410.5396     0.1086     0.0598

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   393.5164     0.0000   393.5164  1110.8291     0.3543    -0.0957     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.3723   521.5792   512.5975     0.0000     0.0600     0.1435    -0.3931

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.2901     9.1163     1.0058   533.7725     2.8539   517.4156     4.0110

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  18119.623       0.226      49.550  491559.125   0.702378E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.0540   Tt4 =   533.7725   T1  =   506.4083

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    172972.30    473.0085     88.5317      1.1483      0.7106      5.9489      1.0540     37.3740
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5μm, 4g/m^3, ISA +36R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 10% 39000 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.918   EfDer =  0.951    SH =  0.216939E-02

    W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.715    2491.186       4.265     477.903       1.000       1.000       0.980
  W Kg/sec =  11.689  Wdry =  25.660  WH2O = 0.056  lbm/sec   H2O =   0.825g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     85.085    2595.293       1.379       0.250      53.419      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  65153.953   20160.357       3.335     831.557     249.376     619.754       2.485

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   188.04    -0.06   188.04     0.18     0.46   467.22
 MEAN    17.06     0.00    -0.02   188.04    -0.06   188.04     0.18     0.39
 HUB     12.51     0.00    -0.02   188.04    -0.06   188.04     0.18     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.26    50.47    16.79   448.49   486.38      4.17   475.08   466.80    32.99
 MEAN    63.12    47.20    15.92   370.88   415.89      4.17   475.08   466.80    32.99
 HUB     55.35    38.62    16.73   271.96   330.70      4.17   475.08   466.80    32.99

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   400.74   312.08   251.39  1074.77      0.37     7.29     6.52    16.04
 MEAN    18.04   404.58   314.27   254.79  1071.54      0.38     7.43     6.80    12.53
 HUB     15.00   436.86   351.47   259.45  1067.61      0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    448.49   286.02   136.41     0.27  6439.46      0.92     0.87
 MEAN   392.10   266.41    77.83     0.25  5669.20      0.92     0.87     0.87     1.79
 HUB    326.10   260.69    25.37     0.24  5272.84      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.93     1.16     4.49   500.28     1.05   487.44   483.06    29.99
 MEAN     4.85     1.14     4.40   497.60     1.04   484.52   481.97    33.20
 HUB      4.81     1.13     4.29   496.23     1.04   480.97   482.10    37.57

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     51.15    28.49    24.20     4.29     0.93     0.59     1.80
 MEAN    50.97    16.99    12.70     4.29     0.95     0.53     2.22
 HUB     53.57    -5.59    -9.30     3.71     0.95     0.40     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.951       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   416.0851   313.6549   273.3998  1071.0575     0.3885    -0.0344     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8569     4.3837   484.2385   482.7358    34.7603    48.9227    35.4000   -13.5227

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   271.0297    66.3021   262.7949  1079.7751     0.2510     0.5268     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8438     4.6393   492.1823   480.8011   554.9116     0.0378     0.6205

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   270.0361     0.0000   270.0361  1079.7723     0.2501     0.4930     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.6170	492.2282	482.2071	0.0000	0.0600	0.0907	0.4794

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8068	4.8189	1.1300	498.0333	20.1333	165.5014	1.2830

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
126329.250	0.628	183.582	261214.828	0.403095E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =15.524 EfDer = 0.954 SH = 0.598272E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.715	2491.186	4.819	498.031	1.000	1.000	0.980

W Kg/sec = 11.689 Wdry = 25.562 WH2O = 0.154 lbm/sec H2O = 2.435g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
76.865	2542.348	1.374	0.253	53.542	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60856.477	20129.814	2.615	590.487	225.794	468.502	2.075

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	247.31	-0.09	247.31	0.23	0.47	455.91
MEAN	18.08	0.00	-0.02	247.31	-0.09	247.31	0.23	0.43	
HUB	15.21	0.00	-0.02	247.31	-0.09	247.31	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	61.04	46.36	14.68	446.75	510.71	4.65	493.20	486.13	47.51
MEAN	57.82	42.30	15.52	393.02	464.43	4.65	493.20	486.13	47.51
HUB	53.21	37.84	15.37	330.66	412.99	4.65	493.20	486.13	47.51

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	368.50	261.02	260.11	1093.94	0.34	2.33	2.04	9.02
MEAN	18.01	367.31	256.58	262.83	1091.38	0.34	2.40	2.13	7.35
HUB	15.22	388.37	283.10	265.86	1088.85	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	443.92	317.98	182.90	0.29	5331.86	0.92	0.87		
MEAN	391.53	295.46	134.95	0.27	4622.49	0.92	0.87	0.87	1.73
HUB	330.94	270.13	47.84	0.25	4311.00	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.41	1.12	5.01	516.34	1.04	505.62	496.28	33.38
MEAN	5.33	1.11	4.94	513.91	1.03	503.25	495.37	35.98
HUB	5.29	1.10	4.86	512.84	1.03	500.92	495.50	38.73

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	45.10	35.11	31.50	3.61	0.93	0.56	1.40
MEAN	44.31	27.18	23.50	3.68	0.95	0.53	1.63
HUB	46.80	10.20	6.50	3.70	0.95	0.52	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.954	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	392.1014	257.2978	295.8739	1090.2059	0.3597	-0.1034	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3415	4.8926	502.2312	496.2551	37.4654	41.0109	30.6000	-10.4109

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	285.9327	60.6198	279.4330	1096.3420	0.2608	0.3849	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.3344	5.0924	507.9117	494.2018	491.5697	0.0273	0.4793

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	296.4682	0.0000	296.4682	1095.7985	0.2705	0.3675	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0576	507.4296	494.9498	0.0000	0.0600	0.0709	0.3002

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8247	5.3165	1.1032	514.3613	16.3313	185.7310	1.4398

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
103498.055	0.525	150.403	237501.219	0.683387E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.554 EfDer = 0.970 SH = 0.801966E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.715	2491.186	5.316	514.360	1.000	1.000	0.980

W Kg/sec = 11.689 Wdry = 25.509 WH2O = 0.206 lbm/sec H2O = 3.483g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.805	2501.671	1.371	0.254	53.608	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
57036.309	20113.355	2.619	545.479	208.264	424.468	2.038

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	250.93	-0.09	250.93	0.23	0.46	438.14
MEAN	17.74	0.00	-0.02	250.93	-0.09	250.93	0.23	0.42	
HUB	15.05	0.00	-0.02	250.93	-0.09	250.93	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.10	46.36	13.74	436.32	503.40	5.13	509.42	496.26	37.54
MEAN	56.95	43.40	13.55	385.63	460.15	5.13	509.42	496.26	37.54
HUB	52.52	38.84	13.68	327.18	412.39	5.13	509.42	496.26	37.54

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	359.88	244.76	263.84	1109.84	0.32	2.26	1.98	8.75
MEAN	17.51	360.78	243.47	266.25	1107.65	0.33	2.34	2.07	6.78
HUB	14.85	383.92	274.01	268.91	1105.50	0.35	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	430.66	322.76	185.91	0.29	4850.33	0.92	0.89		
MEAN	380.59	299.48	137.12	0.27	4263.83	0.92	0.89	0.89	1.69
HUB	322.83	273.31	48.83	0.25	4070.29	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.90	1.11	5.49	530.90	1.03	520.74	504.66	27.67
MEAN	5.83	1.10	5.42	528.90	1.03	518.68	504.02	29.39
HUB	5.80	1.09	5.35	528.24	1.03	516.67	504.36	31.15

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	42.85	35.17	31.50	3.67	0.93	0.53	1.40
MEAN	42.44	27.25	23.50	3.75	0.94	0.51	1.62
HUB	45.54	10.29	6.50	3.79	0.94	0.51	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.970	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	386.7586	245.0662	299.2069	1106.4474	0.3495	-0.1113	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.8379	5.3739	517.6092	504.8708	30.4893	39.3193	31.5000	-7.8193

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	294.1394	64.1645	287.0556	1111.6971	0.2646	0.3334	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.8332	5.5606	522.5413	502.9861	451.3937	0.0212	0.4546

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	299.1032	0.0000	299.1032	1111.3840	0.2691	0.3542	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5382	522.2593	503.2300	0.0000	0.0600	0.0567	0.2804

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8515	5.8182	1.0944	529.2734	14.9914	190.8676	1.4796

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
95582.367	0.515	138.900	236214.281	0.858682E-02

Melt Ratio at Stator LE, Throat, TE
0.25141E+00 0.33050E+00 0.56987E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =12.013 EfDer = 0.980 SH = 0.899243E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.715	2491.186	5.818	529.250	1.000	1.000	0.980

W Kg/sec = 11.689 Wdry = 25.484 WH2O = 0.231 lbm/sec H2O = 4.154g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.630	2466.177	1.370	0.255	53.640	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53616.199	20105.457	2.657	513.330	193.165	395.845	2.049

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	250.67	-0.09	250.67	0.23	0.44	414.49
MEAN	16.97	0.00	-0.02	250.67	-0.09	250.67	0.23	0.40	
HUB	14.32	0.00	-0.02	250.67	-0.09	250.67	0.23	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.10	46.36	12.74	418.71	488.08	5.62	524.33	503.06	26.93
MEAN	55.81	43.80	12.01	368.94	446.11	5.62	524.33	503.06	26.93
HUB	51.17	37.84	13.33	311.31	399.75	5.62	524.33	503.06	26.93

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	345.98	225.04	262.79	1124.05	0.31	2.16	1.89	8.34
MEAN	16.57	346.81	223.76	264.97	1122.07	0.31	2.24	1.97	6.35
HUB	13.89	368.45	253.53	267.35	1120.12	0.33	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	410.45	321.61	185.40	0.29	4250.49	0.92	0.90		
MEAN	360.31	298.09	136.55	0.27	3710.03	0.92	0.90	0.90	1.64
HUB	301.96	271.70	48.43	0.24	3522.82	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.36	1.09	5.97	543.68	1.03	534.31	509.66	20.55
MEAN	6.29	1.08	5.90	541.84	1.02	532.43	509.08	21.63
HUB	6.27	1.08	5.82	541.21	1.02	530.58	509.33	22.74

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.58	35.20	31.50	3.70	0.93	0.50	1.40
MEAN	40.18	27.26	23.50	3.76	0.94	0.49	1.62
HUB	43.48	10.27	6.50	3.77	0.94	0.48	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.980	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	367.4749	225.0177	290.5251	1121.2528	0.3277	-0.0879	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3027	5.8598	531.6738	509.7841	22.3142	37.7585	32.4000	-5.3585

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   291.4368    65.3607   284.0130  1125.3629     0.2590     0.3002     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.3001     6.0187   535.5947   508.6056   432.2457     0.0163     0.4338

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   289.1937     0.0000   289.1937  1125.4418     0.2570     0.3423     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.0114   535.6990   509.2786     0.0000     0.0600     0.0463     0.2825

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8616     6.2878     1.0807   542.2378    12.9947   205.6480     1.5942

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  83042.813       0.493     120.678  241763.719   0.990792E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =10.560   EfDer =  0.989    SH =  0.119497E-01

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.715    2491.186       6.288     542.235       1.000       1.000       0.980
 W Kg/sec =  11.689  Wdry =  25.408  WH2O = 0.307  lbm/sec   H2O =   5.829g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     61.468    2436.517       1.367       0.257      53.736      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50776.730   20081.309       2.812     509.668     181.220     384.739       2.123

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   239.07    -0.08   239.07     0.21     0.41   389.52
 MEAN    15.91     0.00    -0.02   239.07    -0.08   239.07     0.21     0.37
 HUB     13.07     0.00    -0.02   239.07    -0.08   239.07     0.21     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     59.03    47.36    11.67   398.27   464.59     6.10   537.80   511.16    24.59
 MEAN    55.36    44.80    10.56   345.94   420.58     6.10   537.80   511.16    24.59
 HUB     49.93    38.84    11.09   284.14   371.40     6.10   537.80   511.16    24.59

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   328.46   211.61   251.21  1136.54      0.29     2.05     1.78     7.43
 MEAN    15.50   326.32   205.69   253.33  1134.52      0.29     2.13     1.86     5.75
 HUB     12.59   342.09   227.36   255.60  1132.52      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    390.01   308.11   178.40     0.27  3797.82      0.92     0.90
 MEAN   336.91   285.30   131.23     0.25  3188.97      0.92     0.90     0.90     1.63
 HUB    273.70   259.77    46.34     0.23  2863.54      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.80     1.08     6.43   555.05     1.02   546.68   517.67    20.79
 MEAN     6.72     1.07     6.35   552.99     1.02   544.73   517.02    21.85
 HUB      6.67     1.06     6.27   551.89     1.02   542.81   517.02    22.95

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     40.11    35.38    31.50     3.88     0.93     0.50     1.40
 MEAN    39.07    27.38    23.50     3.88     0.94     0.47     1.64
 HUB     41.65    10.28     6.50     3.78     0.94     0.45     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.989       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   356.4271   209.4589   288.3874  1133.0927     0.3146    -0.1664     2.0437
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    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7244     6.2889   543.4775   517.9210    22.8130    35.9913    33.0000    -2.9913

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   294.4162    67.2302   286.6374  1136.3239     0.2591     0.1864     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.7218     6.4225   546.6039   516.9085   410.5396     0.0267     0.4089

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   286.4656     0.0000   286.4656  1136.6654     0.2520     0.3321     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.4335   546.9641   517.5077     0.0000     0.0600     0.0397     0.2154

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8713     6.7169     1.0683   553.3094    11.0765   223.7549     1.7345

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  71556.344       0.470     103.986  253887.156   0.137842E-01

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.1578   Tt4 =   553.3094   T1  =   477.9028

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    480008.84    697.5491     85.0848      1.5750      0.8285     15.9182      1.1578     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 38334 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.820   EfDer =  0.951    SH =  0.189374E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     24.934    2407.715       4.199     471.460       1.000       1.000       0.980
  W Kg/sec =  11.334  Wdry =  24.887  WH2O = 0.047  lbm/sec   H2O =   0.719g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.217    2525.419       1.379       0.250      53.410      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  63237.621   19549.883       3.410     831.557     243.858     619.754       2.541

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   182.51    -0.06   182.51     0.17     0.45   454.64
 MEAN    17.06     0.00    -0.02   182.51    -0.06   182.51     0.17     0.38
 HUB     12.51     0.00    -0.02   182.51    -0.06   182.51     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.17    50.47    16.70   433.46   470.38     4.11   468.80   462.60    37.49
 MEAN    63.02    47.20    15.82   358.46   402.30     4.11   468.80   462.60    37.49
 HUB     55.23    38.62    16.61   262.85   320.05     4.11   468.80   462.60    37.49

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   387.73   300.80   244.65  1066.93      0.36     7.29     6.52    16.04
 MEAN    18.04   391.67   303.34   247.77  1063.91      0.37     7.43     6.80    12.53
 HUB     15.00   423.13   339.87   252.05  1060.22      0.40     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    433.46   278.30   132.66     0.26  6206.87      0.92     0.87
 MEAN   378.96   259.05    75.62     0.24  5472.13      0.92     0.87     0.87     1.78
 HUB    315.17   253.26    24.70     0.24  5098.81      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.82     1.15     4.40   492.33     1.04   480.30   478.28    33.89
 MEAN     4.74     1.13     4.32   489.86     1.04   477.58   477.19    37.38
 HUB      4.70     1.12     4.22   488.60     1.04   474.28   477.27    42.12

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.88    28.47    24.20     4.27     0.93     0.59     1.80
 MEAN    50.76    16.97    12.70     4.27     0.95     0.53     2.22
 HUB     53.44    -5.60    -9.30     3.70     0.95     0.40     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.951       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   402.8748   302.7512   265.8002  1063.4613     0.3788    -0.0350     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.7498     4.3082   477.3061   477.8948    39.0366    48.7185    35.4000   -13.3185

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   264.0760    64.6010   256.0524  1071.6307     0.2464     0.5230     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.7383     4.5452   484.6949   476.1440   554.9116     0.0363     0.6158

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   263.0409     0.0000   263.0409  1071.6282     0.2455     0.4895     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.5244   484.7409   477.3961     0.0000     0.0600     0.0893     0.4757
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8087     4.7151     1.1229   490.2582    18.8008   166.0762     1.2874

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 117792.625       0.627     165.975  255670.578   0.339530E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.325   EfDer =  0.956    SH =  0.493407E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     24.934    2407.715       4.715     490.256       1.000       1.000       0.980
 W Kg/sec =  11.334  Wdry =  24.811  WH2O = 0.123  lbm/sec   H2O =   1.999g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.575    2476.571       1.375       0.252      53.508      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59271.133   19526.318       2.661     590.487     221.864     468.502       2.112

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   240.88    -0.08   240.88     0.22     0.46   444.12
 MEAN    18.08     0.00    -0.02   240.88    -0.08   240.88     0.22     0.42
 HUB     15.21     0.00    -0.02   240.88    -0.08   240.88     0.22     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.85    46.36    14.49   431.78   494.50     4.56   485.66   480.83    52.21
 MEAN    57.62    42.30    15.32   379.85   449.86     4.56   485.66   480.83    52.21
 HUB     53.00    37.84    15.16   319.58   400.26     4.56   485.66   480.83    52.21

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   356.79   250.54   254.03  1085.00      0.33     2.33     2.04     9.02
 MEAN    18.01   355.96   246.78   256.53  1082.60      0.33     2.40     2.13     7.35
 HUB     15.22   376.72   273.26   259.31  1080.25      0.35     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    429.05   310.48   178.51     0.29  5117.67      0.92     0.87
 MEAN   378.41   288.33   131.63     0.27  4446.06      0.92     0.87     0.87     1.72
 HUB    319.85   263.46    46.59     0.24  4161.15      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.26     1.12     4.89   507.30     1.03   497.21   490.74    37.08
 MEAN     5.19     1.10     4.82   505.06     1.03   495.02   489.84    39.86
 HUB      5.16     1.09     4.75   504.11     1.03   492.87   489.95    42.79

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     44.60    35.10    31.50     3.60     0.93     0.55     1.40
 MEAN    43.89    27.16    23.50     3.66     0.95     0.53     1.63
 HUB     46.50    10.19     6.50     3.69     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.956       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   380.2552   247.4764   288.7031  1081.4696     0.3516    -0.1051     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.1982     4.7793   494.0432   490.6732    41.4968    40.6032    30.6000   -10.0032

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   279.4667    59.2489   273.1139  1087.2061     0.2571     0.3767     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.1921     4.9629   499.3079   488.8354   491.5697     0.0258     0.4716

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   289.6720     0.0000   289.6720  1086.6830     0.2666     0.3613     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9306	498.8498	489.5150	0.0000	0.0600	0.0685	0.2925

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8276	5.1758	1.0977	505.4905	15.2354	187.1101	1.4505

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
96223.336	0.523	135.583	232657.516	0.561069E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.265 EfDer = 0.972 SH = 0.655338E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
24.934	2407.715	5.176	505.489	1.000	1.000	0.980

W Kg/sec = 11.334 Wdry = 24.771 WH2O = 0.163 lbm/sec H2O = 2.824g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.909	2438.971	1.373	0.253	53.561	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55735.516	19513.680	2.655	545.479	205.447	424.468	2.066

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	245.21	-0.08	245.21	0.23	0.45	427.16
MEAN	17.74	0.00	-0.02	245.21	-0.08	245.21	0.23	0.41	
HUB	15.05	0.00	-0.02	245.21	-0.08	245.21	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.83	46.36	13.47	421.70	487.88	5.00	500.75	490.67	41.56
MEAN	56.66	43.40	13.26	372.71	446.21	5.00	500.75	490.67	41.56
HUB	52.22	38.84	13.38	316.22	400.22	5.00	500.75	490.67	41.56

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	348.78	234.20	258.46	1099.94	0.32	2.26	1.98	8.75
MEAN	17.51	350.07	233.66	260.68	1097.90	0.32	2.34	2.07	6.78
HUB	14.85	372.93	264.27	263.13	1095.90	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	416.23	316.13	182.04	0.29	4641.10	0.92	0.89		
MEAN	367.83	293.18	134.18	0.27	4092.07	0.92	0.89	0.89	1.67
HUB	312.02	267.42	47.74	0.24	3925.72	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.71	1.10	5.33	520.87	1.03	511.27	499.14	31.56
MEAN	5.64	1.09	5.27	519.05	1.03	509.38	498.52	33.44
HUB	5.63	1.09	5.20	518.50	1.03	507.53	498.85	35.38

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	42.18	35.16	31.50	3.66	0.93	0.52	1.40
MEAN	41.87	27.24	23.50	3.74	0.94	0.50	1.62
HUB	45.12	10.28	6.50	3.78	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.972	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	375.6573	235.1925	292.9214	1096.7272	0.3425	-0.1135	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6560	5.2229	508.3568	499.3832	34.8184	38.7617	31.5000	-7.2617

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	288.3598	62.9037	281.4151	1101.6283	0.2618	0.3241	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6521	5.3940	512.9222	497.7737	451.3937	0.0198	0.4446

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	293.2446	0.0000	293.2446	1101.3586	0.2663	0.3457	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3726	512.6902	498.3148	0.0000	0.0600	0.0541	0.2697

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8503	5.6386	1.0894	519.4589	13.9814	192.7484	1.4942

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
88774.953	0.512	125.088	231657.281	0.741412E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.69384E-02 0.76522E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.615 EfDer = 0.983 SH = 0.827915E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
24.934	2407.715	5.639	519.449	1.000	1.000	0.980

W Kg/sec = 11.334 Wdry = 24.728 WH2O = 0.206 lbm/sec H2O = 3.780g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.051	2405.956	1.371	0.255	53.617	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52600.465	19500.139	2.682	513.330	191.374	395.845	2.068

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	245.91	-0.08	245.91	0.22	0.43	404.37
MEAN	16.97	0.00	-0.02	245.91	-0.08	245.91	0.22	0.39	
HUB	14.32	0.00	-0.02	245.91	-0.08	245.91	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.72	46.36	12.36	404.68	473.61	5.45	514.71	498.98	33.89
MEAN	55.41	43.80	11.61	356.58	433.22	5.45	514.71	498.98	33.89
HUB	50.75	37.84	12.91	300.88	388.65	5.45	514.71	498.98	33.89

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	335.78	214.45	258.38	1113.19	0.30	2.16	1.89	8.34
MEAN	16.57	337.10	214.10	260.39	1111.37	0.30	2.24	1.97	6.35
HUB	13.89	358.66	244.32	262.57	1109.57	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	396.69	316.19	182.24	0.28	4050.43	0.92	0.90		
MEAN	348.24	292.91	134.14	0.26	3549.90	0.92	0.90	0.90	1.62
HUB	291.85	266.84	47.52	0.24	3394.86	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.13	1.09	5.77	532.78	1.03	523.94	505.58	26.41
MEAN	6.07	1.08	5.70	531.13	1.02	522.22	505.05	27.74
HUB	6.05	1.07	5.64	530.62	1.02	520.53	505.34	29.11

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	39.69	35.20	31.50	3.70	0.93	0.49	1.40
MEAN	39.43	27.26	23.50	3.76	0.94	0.47	1.62
HUB	42.94	10.26	6.50	3.76	0.94	0.47	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.983	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	357.5772	215.3038	285.4921	1110.5421	0.3220	-0.0902	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.0823	5.6689	521.4733	505.6588	28.4358	37.0218	32.4000	-4.6218

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	286.8073	64.3225	279.5014	1114.3159	0.2574	0.2817	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.0803	5.8106	525.0294	504.3329	432.2457	0.0151	0.4216

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	284.4369	0.0000	284.4369	1114.3538	0.2552	0.3312	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.8058	525.0735	504.3773	0.0000	0.0600	0.0439	0.2691

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8727	6.0693	1.0764	531.4146	12.0623	208.4571	1.6159

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
76942.086	0.489	108.415	237483.266	0.863467E-02

Melt Ratio at Stator LE, Throat, TE
0.50822E+00 0.59188E+00 0.83101E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =10.122 EfDer = 0.991 SH = 0.888232E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
24.934	2407.715	6.069	531.387	1.000	1.000	0.980

W Kg/sec = 11.334 Wdry = 24.713 WH2O = 0.221 lbm/sec H2O = 4.277g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
61.127	2378.737	1.370	0.255	53.636	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49875.109	19495.391	2.833	509.668	179.900	384.739	2.139

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	234.86	-0.08	234.86	0.21	0.40	380.28
MEAN	15.91	0.00	-0.02	234.86	-0.08	234.86	0.21	0.37	
HUB	13.07	0.00	-0.02	234.86	-0.08	234.86	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.62	47.36	11.26	384.93	450.99	5.89	527.07	504.01	25.34
MEAN	54.92	44.80	10.12	334.35	408.66	5.89	527.07	504.01	25.34
HUB	49.47	38.84	10.63	274.62	361.41	5.89	527.07	504.01	25.34

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	318.89	201.37	247.27	1125.11	0.28	2.05	1.78	7.43
MEAN	15.50	317.39	196.53	249.22	1123.22	0.28	2.13	1.86	5.75
HUB	12.59	333.31	218.95	251.31	1121.36	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	376.94	303.26	175.57	0.27	3614.07	0.92	0.91		
MEAN	325.62	280.68	129.10	0.25	3046.99	0.92	0.91	0.91	1.61
HUB	264.53	255.41	45.58	0.23	2757.65	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.54	1.08	6.19	543.27	1.02	535.30	510.06	21.25
MEAN	6.46	1.06	6.12	541.40	1.02	533.51	509.42	22.31
HUB	6.42	1.06	6.05	540.45	1.02	531.75	509.41	23.40

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	39.16	35.38	31.50	3.88	0.93	0.49	1.40
MEAN	38.26	27.38	23.50	3.88	0.94	0.46	1.64
HUB	41.06	10.28	6.50	3.78	0.94	0.44	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.991	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	347.1141	200.1311	283.6119	1121.8525	0.3094	-0.1696	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.4672	6.0603	532.2856	510.2590	23.3442	35.2088	33.0000	-2.2088

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   289.8647    66.1908   282.2061  1124.8351     0.2577     0.1686     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.4653     6.1796   535.1385   509.4338   410.5396     0.0254     0.3961

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   282.0279     0.0000   282.0279  1125.1776     0.2507     0.3194     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.1903   535.4908   509.9966     0.0000     0.0600     0.0383     0.1987

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8747     6.4607     1.0645   541.7042    10.3187   227.7472     1.7655

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  65997.039       0.464      92.993  249354.516   0.101687E-01

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.1490   Tt4 =   541.7042   T1  =   471.4601

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    445730.06    628.0527     83.2174      1.5386      0.8327     15.8204      1.1490     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 37357 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.828   EfDer =  0.951    SH =  0.172602E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.520    2375.659       4.337     469.488       1.000       1.000       0.980
  W Kg/sec =  11.600  Wdry =  25.476  WH2O = 0.044  lbm/sec   H2O =   0.680g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.291    2497.024       1.379       0.250      53.404      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  62374.938   20010.354       3.449     831.557     241.118     619.754       2.570

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   180.02    -0.06   180.02     0.17     0.44   449.53
 MEAN    17.06     0.00    -0.02   180.02    -0.06   180.02     0.17     0.38
 HUB     12.51     0.00    -0.02   180.02    -0.06   180.02     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.18    50.47    16.71   427.69   464.09     4.25   466.89   461.36    38.47
 MEAN    63.03    47.20    15.83   353.68   396.92     4.25   466.89   461.36    38.47
 HUB     55.24    38.62    16.62   259.35   315.76     4.25   466.89   461.36    38.47

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   382.62   296.73   241.56  1064.50      0.36     7.29     6.52    16.04
 MEAN    18.04   386.51   299.29   244.57  1061.56      0.36     7.43     6.80    12.53
 HUB     15.00   417.50   335.34   248.70  1057.96      0.39     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    427.69   274.78   130.97     0.26  6122.73      0.92     0.87
 MEAN   373.91   255.70    74.63     0.24  5399.01      0.92     0.87     0.87     1.78
 HUB    310.97   249.89    24.37     0.24  5030.92      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.96     1.14     4.54   489.81     1.04   478.09   476.82    34.82
 MEAN     4.88     1.13     4.46   487.41     1.04   475.45   475.71    38.35
 HUB      4.85     1.12     4.36   486.18     1.04   472.23   475.73    43.13

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.85    28.46    24.20     4.26     0.93     0.59     1.80
 MEAN    50.75    16.97    12.70     4.27     0.95     0.53     2.22
 HUB     53.44    -5.60    -9.30     3.70     0.95     0.40     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.951       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   397.5534   298.7058   262.3425  1061.1267     0.3747    -0.0351     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8925     4.4469   475.1750   476.3827    40.0201    48.7083    35.4000   -13.3083

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   260.8631    63.8151   252.9372  1069.0944     0.2440     0.5226     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8811     4.6858   482.3636   474.7490   554.9116     0.0358     0.6151

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   259.8201     0.0000   259.8201  1069.0931     0.2430     0.4889     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.6648   482.4092   475.9192     0.0000     0.0600     0.0893     0.4750
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8090     4.8574     1.1200   487.7967    18.3109   166.0929     1.2875

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 114636.203       0.627     165.321  262391.438   0.306532E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.298   EfDer =  0.956    SH =  0.443208E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.520    2375.659       4.857     487.795       1.000       1.000       0.980
 W Kg/sec =  11.600  Wdry =  25.406  WH2O = 0.113  lbm/sec   H2O =   1.861g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     74.894    2449.756       1.376       0.252      53.492      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58542.746   19988.910       2.686     590.487     219.800     468.502       2.131

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   237.92    -0.08   237.92     0.22     0.46   439.31
 MEAN    18.08     0.00    -0.02   237.92    -0.08   237.92     0.22     0.42
 HUB     15.21     0.00    -0.02   237.92    -0.08   237.92     0.22     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.82    46.36    14.46   426.03   488.04     4.70   483.30   479.13    53.34
 MEAN    57.60    42.30    15.30   374.79   444.00     4.70   483.30   479.13    53.34
 HUB     52.97    37.84    15.13   315.33   395.08     4.70   483.30   479.13    53.34

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   352.19   246.87   251.19  1082.17      0.33     2.33     2.04     9.02
 MEAN    18.01   351.42   243.28   253.60  1079.84      0.33     2.40     2.13     7.35
 HUB     15.22   371.95   269.57   256.28  1077.54      0.35     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    423.34   306.98   176.47     0.28  5042.67      0.92     0.87
 MEAN   373.37   285.02   130.09     0.26  4382.98      0.92     0.87     0.87     1.72
 HUB    315.60   260.38    46.03     0.24  4104.88      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.41     1.11     5.03   504.39     1.03   494.54   489.01    38.07
 MEAN     5.33     1.10     4.96   502.22     1.03   492.42   488.10    40.89
 HUB      5.30     1.09     4.89   501.30     1.03   490.32   488.18    43.85

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     44.50    35.09    31.50     3.59     0.93     0.55     1.40
 MEAN    43.81    27.16    23.50     3.66     0.95     0.53     1.63
 HUB     46.45    10.18     6.50     3.68     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.956       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   375.4347   243.9647   285.3637  1078.7216     0.3480    -0.1054     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3439     4.9213   491.4593   488.8979    42.5512    40.5280    30.6000    -9.9280

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   276.4072    58.6003   270.1239  1084.3147     0.2549     0.3750     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3379     5.1060   496.5783   487.1746   491.5697     0.0254     0.4700

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   286.4677     0.0000   286.4677  1083.8021     0.2643     0.3599     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0734	496.1308	487.8156	0.0000	0.0600	0.0680	0.2908

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8282	5.3214	1.0955	502.6360	14.8423	187.3397	1.4522

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
93590.617	0.522	134.970	238836.969	0.503357E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.202 EfDer = 0.972 SH = 0.587133E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.520	2375.659	5.321	502.635	1.000	1.000	0.980

W Kg/sec = 11.600 Wdry = 25.370 WH2O = 0.150 lbm/sec H2O = 2.618g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.396	2413.323	1.374	0.253	53.539	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55124.016	19977.434	2.676	545.479	203.855	424.468	2.082

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	242.52	-0.08	242.52	0.22	0.44	422.67
MEAN	17.74	0.00	-0.02	242.52	-0.08	242.52	0.22	0.41	
HUB	15.05	0.00	-0.02	242.52	-0.08	242.52	0.22	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.77	46.36	13.41	416.08	481.67	5.14	497.99	488.90	42.65
MEAN	56.60	43.40	13.20	367.75	440.58	5.14	497.99	488.90	42.65
HUB	52.15	38.84	13.31	312.01	395.24	5.14	497.99	488.90	42.65

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	344.39	230.50	255.89	1096.76	0.31	2.26	1.98	8.75
MEAN	17.51	345.74	230.14	258.02	1094.78	0.32	2.34	2.07	6.78
HUB	14.85	368.41	260.62	260.39	1092.83	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	410.69	312.96	180.19	0.29	4567.88	0.92	0.89		
MEAN	362.94	290.19	132.80	0.27	4030.40	0.92	0.89	0.89	1.67
HUB	307.86	264.64	47.24	0.24	3871.50	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.86	1.10	5.48	517.60	1.03	508.23	497.33	32.52
MEAN	5.79	1.09	5.41	515.84	1.03	506.39	496.70	34.43
HUB	5.77	1.08	5.34	515.32	1.03	504.59	497.01	36.39

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	42.01	35.15	31.50	3.65	0.93	0.52	1.40
MEAN	41.73	27.23	23.50	3.73	0.94	0.50	1.62
HUB	45.03	10.28	6.50	3.78	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.972	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	371.0850	231.6479	289.9022	1093.6240	0.3393	-0.1140	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.8041	5.3673	505.3834	497.5328	35.8434	38.6268	31.5000	-7.1268

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	285.5481	62.2904	278.6711	1098.3992	0.2600	0.3213	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.8003	5.5388	509.8169	496.0248	451.3937	0.0194	0.4421

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	290.3684	0.0000	290.3684	1098.1445	0.2644	0.3434	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5173	509.5996	496.6305	0.0000	0.0600	0.0535	0.2669

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8504	5.7868	1.0875	516.2507	13.6169	193.2331	1.4979

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
86274.617	0.512	124.420	237908.875	0.668832E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.513 EfDer = 0.983 SH = 0.766326E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.520	2375.659	5.787	516.245	1.000	1.000	0.980

W Kg/sec = 11.600 Wdry = 25.324 WH2O = 0.196 lbm/sec H2O = 3.616g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
64.673	2381.288	1.372	0.254	53.597	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52097.145	19963.072	2.699	513.330	190.191	395.845	2.081

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	243.56	-0.08	243.56	0.22	0.43	400.22
MEAN	16.97	0.00	-0.02	243.56	-0.08	243.56	0.22	0.39	
HUB	14.32	0.00	-0.02	243.56	-0.08	243.56	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.62	46.36	12.26	399.29	467.78	5.60	511.58	497.61	36.11
MEAN	55.31	43.80	11.51	351.83	427.97	5.60	511.58	497.61	36.11
HUB	50.64	37.84	12.80	296.88	384.06	5.60	511.58	497.61	36.11

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	331.70	210.77	256.13	1109.69	0.30	2.16	1.89	8.34
MEAN	16.57	333.13	210.66	258.07	1107.91	0.30	2.24	1.97	6.35
HUB	13.89	354.55	240.86	260.18	1106.17	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	391.41	313.43	180.64	0.28	3980.92	0.92	0.90		
MEAN	343.60	290.30	132.94	0.26	3492.95	0.92	0.90	0.90	1.62
HUB	287.96	264.41	47.10	0.24	3346.73	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.28	1.09	5.91	529.20	1.03	520.56	504.27	28.42
MEAN	6.22	1.08	5.85	527.61	1.02	518.89	503.74	29.84
HUB	6.20	1.07	5.78	527.14	1.02	517.26	504.03	31.28

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	39.45	35.19	31.50	3.69	0.93	0.49	1.40
MEAN	39.23	27.25	23.50	3.75	0.94	0.47	1.62
HUB	42.79	10.26	6.50	3.76	0.94	0.47	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.983	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	353.4651	211.8489	282.9446	1107.0929	0.3193	-0.0908	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.2320	5.8151	518.1616	504.3580	30.6130	36.8233	32.4000	-4.4233

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	284.3749	63.7770	277.1310	1110.7599	0.2560	0.2782	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.2302	5.9568	521.6072	503.0938	432.2457	0.0148	0.4182

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	282.0337	0.0000	282.0337	1110.8069	0.2539	0.3280	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.9518	521.6604	503.1872	0.0000	0.0600	0.0433	0.2652

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8722	6.2192	1.0747	527.9051	11.7388	209.1775	1.6215

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
74751.391	0.488	107.802	244014.828	0.809461E-02

Melt Ratio at Stator LE, Throat, TE
0.34229E+00 0.41891E+00 0.64188E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.984 EfDer = 0.992 SH = 0.842143E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.520	2375.659	6.219	527.882	1.000	1.000	0.980

W Kg/sec = 11.600 Wdry = 25.305 WH2O = 0.215 lbm/sec H2O = 4.185g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
60.853	2354.856	1.371	0.255	53.621	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49462.949	19956.975	2.847	509.668	179.044	384.739	2.149

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	232.91	-0.08	232.91	0.21	0.40	376.46
MEAN	15.91	0.00	-0.02	232.91	-0.08	232.91	0.21	0.36	
HUB	13.07	0.00	-0.02	232.91	-0.08	232.91	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.49	47.36	11.13	379.80	445.60	6.04	523.63	502.97	27.76
MEAN	54.78	44.80	9.98	329.90	403.90	6.04	523.63	502.97	27.76
HUB	49.33	38.84	10.49	270.96	357.37	6.04	523.63	502.97	27.76

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	315.14	197.66	245.44	1121.27	0.28	2.05	1.78	7.43
MEAN	15.50	313.84	193.18	247.33	1119.44	0.28	2.13	1.86	5.75
HUB	12.59	329.78	215.82	249.35	1117.64	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	371.92	301.02	174.27	0.27	3547.46	0.92	0.91		
MEAN	321.29	278.54	128.11	0.25	2995.15	0.92	0.91	0.91	1.60
HUB	261.01	253.41	45.19	0.23	2718.26	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.69	1.08	6.34	539.39	1.02	531.60	508.50	22.53
MEAN	6.61	1.06	6.27	537.59	1.02	529.87	507.87	23.63
HUB	6.57	1.06	6.20	536.69	1.02	528.16	507.85	24.77

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.84	35.37	31.50	3.87	0.93	0.48	1.40
MEAN	37.99	27.38	23.50	3.88	0.94	0.45	1.64
HUB	40.88	10.27	6.50	3.77	0.94	0.44	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.992	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	343.3263	196.7251	281.3755	1118.1299	0.3071	-0.1705	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.6168	6.2062	528.6502	508.6719	24.7113	34.9595	33.0000	-1.9595

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   287.6975    65.6960   280.0962  1121.0199     0.2566     0.1628     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6150     6.3247   531.4024   507.8784   410.5396     0.0250     0.3920

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   279.9157     0.0000   279.9157  1121.3625     0.2496     0.3152     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3356   531.7501   508.3893     0.0000     0.0600     0.0379     0.1933

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8763     6.6104     1.0629   537.8859    10.0071   229.3938     1.7782

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  63853.898       0.462      92.086  256341.719   0.925743E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.1457   Tt4 =   537.8859   T1  =   469.4884

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    433106.72    624.5987     82.2912      1.5241      0.8332     15.8281      1.1457     37.3740
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*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 34281 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.872   EfDer =  0.951    SH =  0.171826E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     27.380    2299.789       4.829     471.199       1.000       1.000       0.980
  W Kg/sec =  12.446  Wdry =  27.333  WH2O = 0.047  lbm/sec   H2O =   0.752g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     79.449    2412.891       1.379       0.250      53.404      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60268.254   21469.504       3.572     831.557     232.792     619.754       2.662

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   173.94    -0.06   173.94     0.17     0.43   434.38
 MEAN    17.06     0.00    -0.02   173.94    -0.06   173.94     0.17     0.36
 HUB     12.51     0.00    -0.02   173.94    -0.06   173.94     0.17     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.21    50.47    16.74   414.03   449.14     4.74   468.78   463.29    39.22
 MEAN    63.07    47.20    15.87   342.39   384.09     4.74   468.78   463.29    39.22
 HUB     55.29    38.62    16.67   251.07   305.49     4.74   468.78   463.29    39.22

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   370.50   287.16   234.11  1065.77     0.35     7.29     6.52    16.04
 MEAN    18.04   374.20   289.73   236.82  1063.02     0.35     7.43     6.80    12.53
 HUB     15.00   404.02   324.61   240.54  1059.67     0.38     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    414.03   266.28   126.88     0.25  5925.27     0.92     0.87
 MEAN   361.97   247.59    72.24     0.23  5226.58     0.92     0.87     0.87     1.78
 HUB    301.04   241.69    23.57     0.23  4869.88     0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.47     1.13     5.04   490.23     1.04   479.25   477.91    35.81
 MEAN     5.40     1.12     4.96   487.99     1.04   476.78   476.84    39.16
 HUB      5.36     1.11     4.85   486.84     1.03   473.78   476.82    43.67

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.81    28.46    24.20     4.26     0.93     0.58     1.80
 MEAN    50.74    16.96    12.70     4.26     0.95     0.53     2.22
 HUB     53.46    -5.60    -9.30     3.70     0.95     0.40     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.951       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   384.8633   289.1661   253.9738  1062.6180     0.3622    -0.0354     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.4039     4.9422   476.5232   477.4634    40.7835    48.7072    35.4000   -13.3072

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   253.1650    61.9319   245.4730  1070.0499     0.2366     0.5220     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3926     5.1895   483.2351   475.9814   554.9116     0.0346     0.6136

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   252.1013     0.0000   252.1013  1070.0532     0.2356     0.4873     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.1672   483.2799   477.0560     0.0000     0.0600     0.0893     0.4733
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8087     5.3676     1.1116   488.3528    17.1558   165.9748     1.2866

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 107396.727       0.627     166.174  280462.750   0.294069E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.233   EfDer =  0.956    SH =  0.418414E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     27.380    2299.789       5.368     488.351       1.000       1.000       0.980
 W Kg/sec =  12.446  Wdry =  27.266  WH2O = 0.115  lbm/sec   H2O =   1.942g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     72.759    2370.169       1.376       0.251      53.484      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  56814.473   21448.547       2.766     590.487     213.506     468.502       2.194

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   230.90    -0.08   230.90     0.22     0.44   425.04
 MEAN    18.08     0.00    -0.02   230.90    -0.08   230.90     0.22     0.40
 HUB     15.21     0.00    -0.02   230.90    -0.08   230.90     0.22     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.76    46.36    14.40   412.43   472.73     5.20   484.12   480.06    53.89
 MEAN    57.53    42.30    15.23   362.82   430.13     5.20   484.12   480.06    53.89
 HUB     52.90    37.84    15.06   305.26   382.81     5.20   484.12   480.06    53.89

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   341.29   238.07   244.55  1082.25      0.32     2.33     2.04     9.02
 MEAN    18.01   340.70   234.95   246.72  1080.09      0.32     2.40     2.13     7.35
 HUB     15.22   360.66   260.77   249.15  1077.95      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    409.82   298.83   171.74     0.28  4863.10      0.92     0.88
 MEAN   361.45   277.26   126.50     0.26  4232.87      0.92     0.88     0.88     1.71
 HUB    305.52   253.14    44.74     0.23  3970.98      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.93     1.11     5.54   503.85     1.03   494.60   489.49    39.43
 MEAN     5.86     1.09     5.47   501.84     1.03   492.63   488.61    42.13
 HUB      5.83     1.09     5.40   501.01     1.03   490.68   488.67    44.95

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     44.23    35.08    31.50     3.58     0.93     0.55     1.40
 MEAN    43.60    27.15    23.50     3.65     0.95     0.52     1.63
 HUB     46.31    10.18     6.50     3.68     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.956       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   364.0515   235.6091   277.5281  1079.0338     0.3374    -0.1063     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8687     5.4312   491.7180   489.3561    43.7521    40.3298    30.6000    -9.7298

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   269.3013    57.0938   263.1796  1084.2378     0.2484     0.3705     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8631     5.6208   496.4804   487.8008   491.5697     0.0242     0.4657

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   279.0125     0.0000   279.0125  1083.7555     0.2574     0.3561     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5870	496.0591	488.3895	0.0000	0.0600	0.0669	0.2861

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8292	5.8460	1.0891	502.2350	13.8850	187.9253	1.4568

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
87489.641	0.521	135.372	255620.688	0.472192E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.029 EfDer = 0.973 SH = 0.546689E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.380	2299.789	5.846	502.234	1.000	1.000	0.980

W Kg/sec = 12.446 Wdry = 27.231 WH2O = 0.150 lbm/sec H2O = 2.684g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
67.748	2337.183	1.374	0.253	53.526	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53713.801	21437.584	2.742	545.479	198.969	424.468	2.133

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	236.32	-0.08	236.32	0.22	0.43	409.33
MEAN	17.74	0.00	-0.02	236.32	-0.08	236.32	0.22	0.39	
HUB	15.05	0.00	-0.02	236.32	-0.08	236.32	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.61	46.36	13.25	402.79	467.07	5.66	497.82	489.40	44.00
MEAN	56.43	43.40	13.03	356.00	427.36	5.66	497.82	489.40	44.00
HUB	51.97	38.84	13.13	302.05	383.57	5.66	497.82	489.40	44.00

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	334.10	221.57	250.06	1095.86	0.30	2.26	1.98	8.75
MEAN	17.51	335.64	221.71	252.00	1094.03	0.31	2.34	2.07	6.78
HUB	14.85	357.87	251.96	254.14	1092.23	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	397.58	305.79	176.00	0.28	4391.01	0.92	0.89		
MEAN	351.35	283.39	129.64	0.26	3882.76	0.92	0.89	0.89	1.65
HUB	298.03	258.28	46.08	0.24	3742.76	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.39	1.09	6.00	516.18	1.03	507.35	497.45	34.19
MEAN	6.33	1.08	5.94	514.56	1.02	505.65	496.84	36.05
HUB	6.31	1.08	5.87	514.12	1.02	503.99	497.14	37.96

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.54	35.14	31.50	3.64	0.93	0.51	1.40
MEAN	41.34	27.22	23.50	3.72	0.94	0.50	1.62
HUB	44.75	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.973	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	360.4337	223.1613	283.0396	1092.9237	0.3298	-0.1154	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3406	5.8885	504.6850	497.6261	37.4733	38.2539	31.5000	-6.7539

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	279.2386	60.9140	272.5136	1097.3494	0.2545	0.3131	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3372	6.0631	508.7897	496.2660	451.3937	0.0183	0.4351

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	283.8871	0.0000	283.8871	1097.1088	0.2588	0.3372	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.0410	508.5841	496.8200	0.0000	0.0600	0.0518	0.2591

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8525	6.3235	1.0817	514.9501	12.7174	194.5500	1.5081

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
80473.719	0.509	124.516	255029.781	0.618347E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.23279E-02

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.239 EfDer = 0.985 SH = 0.700976E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.380	2299.789	6.323	514.944	1.000	1.000	0.980

W Kg/sec = 12.446 Wdry = 27.188 WH2O = 0.192 lbm/sec H2O = 3.628g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
63.420	2308.148	1.373	0.254	53.576	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50951.453	21424.338	2.753	513.330	186.434	395.845	2.123

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	238.20	-0.08	238.20	0.22	0.41	387.93
MEAN	16.97	0.00	-0.02	238.20	-0.08	238.20	0.22	0.38	
HUB	14.32	0.00	-0.02	238.20	-0.08	238.20	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.36	46.36	12.00	386.54	454.11	6.12	510.48	497.67	37.65
MEAN	55.04	43.80	11.24	340.59	415.69	6.12	510.48	497.67	37.65
HUB	50.35	37.84	12.51	287.39	373.34	6.12	510.48	497.67	37.65

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	322.21	201.85	251.15	1107.91	0.29	2.16	1.89	8.34
MEAN	16.57	323.90	202.38	252.90	1106.27	0.29	2.24	1.97	6.35
HUB	13.89	345.06	232.67	254.81	1104.67	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	378.91	307.29	177.06	0.28	3812.53	0.92	0.90		
MEAN	332.63	284.47	130.25	0.26	3355.57	0.92	0.90	0.90	1.60
HUB	278.76	258.95	46.09	0.23	3233.02	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.83	1.08	6.45	526.98	1.02	518.80	504.02	30.12
MEAN	6.77	1.07	6.38	525.54	1.02	517.27	503.53	31.50
HUB	6.75	1.07	6.32	525.15	1.02	515.77	503.81	32.91

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.79	35.18	31.50	3.68	0.93	0.48	1.40
MEAN	38.67	27.25	23.50	3.75	0.94	0.46	1.62
HUB	42.40	10.25	6.50	3.75	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.985	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	343.9055	203.5155	277.2228	1105.4825	0.3111	-0.0923	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7773	6.3457	516.5704	504.1119	32.2990	36.2832	32.4000	-3.8832

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	279.0013	62.5718	271.8943	1108.8589	0.2516	0.2666	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7758	6.4882	519.7369	502.9783	432.2457	0.0139	0.4089

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	276.6748	0.0000	276.6748	1108.9053	0.2495	0.3191	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.4834	519.7897	503.0663	0.0000	0.0600	0.0417	0.2546

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8746	6.7646	1.0698	525.8114	10.9431	211.3962	1.6387

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
69547.148	0.484	107.610	261932.859	0.738663E-02

Melt Ratio at Stator LE, Throat, TE
0.34318E+00 0.41727E+00 0.63167E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.616 EfDer = 0.993 SH = 0.768194E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.380	2299.789	6.765	525.789	1.000	1.000	0.980

W Kg/sec = 12.446 Wdry = 27.170 WH2O = 0.210 lbm/sec H2O = 4.174g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
59.906	2284.185	1.372	0.254	53.597	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
48539.617	21418.551	2.893	509.668	176.181	384.739	2.184

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	228.57	-0.08	228.57	0.21	0.39	365.17
MEAN	15.91	0.00	-0.02	228.57	-0.08	228.57	0.21	0.35	
HUB	13.07	0.00	-0.02	228.57	-0.08	228.57	0.21	0.31	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.14	47.36	10.78	367.67	432.99	6.57	521.68	502.87	29.52
MEAN	54.42	44.80	9.62	319.37	392.79	6.57	521.68	502.87	29.52
HUB	48.94	38.84	10.10	262.31	347.98	6.57	521.68	502.87	29.52

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	306.40	188.66	241.42	1118.69	0.27	2.05	1.78	7.43
MEAN	15.50	305.59	185.12	243.14	1117.01	0.27	2.13	1.86	5.75
HUB	12.59	321.53	208.26	244.97	1115.35	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	360.05	296.07	171.38	0.26	3386.09	0.92	0.91		
MEAN	311.03	273.81	125.91	0.25	2870.16	0.92	0.91	0.91	1.59
HUB	252.67	248.96	44.42	0.22	2623.00	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.24	1.07	6.88	536.44	1.02	529.06	508.11	24.22
MEAN	7.16	1.06	6.81	534.81	1.02	527.47	507.52	25.32
HUB	7.13	1.05	6.74	534.03	1.02	525.91	507.52	26.45

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.01	35.37	31.50	3.87	0.93	0.47	1.40
MEAN	37.28	27.38	23.50	3.88	0.94	0.45	1.64
HUB	40.37	10.28	6.50	3.78	0.94	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.993	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	334.6695	188.5137	276.5254	1115.7406	0.3000	-0.1734	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.1676	6.7422	526.2949	508.2693	26.4295	34.2831	33.0000	-1.2831

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   283.0660    64.6384   275.5871  1118.3788     0.2531     0.1469     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.1662     6.8598   528.7995   507.5655   410.5396     0.0239     0.3808

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   275.4133     0.0000   275.4133  1118.7131     0.2462     0.3037     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.8714   529.1363   508.0278     0.0000     0.0600     0.0372     0.1781

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8781     7.1613     1.0586   535.0904     9.3054   232.7060     1.8039

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  59242.875       0.457      91.666  275521.469   0.837301E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.1356   Tt4 =   535.0904   T1  =   471.1995

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    404150.13    625.3379     79.4486      1.4831      0.8351     15.8721      1.1356     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 30029 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =14.434   EfDer =  0.963    SH =  0.218578E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     31.230    2174.106       5.592     480.729       1.000       1.000       0.980
  W Kg/sec =  14.195  Wdry =  31.161  WH2O = 0.068  lbm/sec   H2O =   1.086g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     79.030    2258.313       1.379       0.250      53.419      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60562.797   24483.221       3.590     831.557     231.641     619.754       2.675

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   174.79    -0.06   174.79     0.16     0.40   406.55
 MEAN    17.06     0.00    -0.02   174.79    -0.06   174.79     0.16     0.35
 HUB     12.51     0.00    -0.02   174.79    -0.06   174.79     0.16     0.28

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.94    50.47    15.47   391.41   428.72     5.49   478.29   471.24    38.05
 MEAN    61.63    47.20    14.43   323.68   367.91     5.49   478.29   471.24    38.05
 HUB     53.64    38.62    15.02   237.35   294.81     5.49   478.29   471.24    38.05

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   354.27   263.72   236.55  1074.44      0.33     7.29     6.52    16.04
 MEAN    18.04   360.30   269.72   238.90  1072.13      0.34     7.43     6.80    12.53
 HUB     15.00   392.36   308.68   242.22  1069.21      0.37     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    391.41   268.81   127.68     0.25  5441.87      0.92     0.88
 MEAN   342.19   249.65    72.48     0.23  4865.63      0.92     0.88     0.88     1.69
 HUB    284.59   243.41    24.09     0.23  4630.89      0.92     0.88

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.23     1.11     5.79   497.23     1.03   487.20   483.94    36.22
 MEAN     6.16     1.10     5.71   495.48     1.03   485.11   483.20    38.94
 HUB      6.13     1.10     5.60   494.77     1.03   482.47   483.47    42.66

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     48.11    28.36    24.20     4.16     0.93     0.54     1.80
 MEAN    48.47    16.88    12.70     4.18     0.95     0.49     2.22
 HUB     51.88    -5.68    -9.30     3.62     0.95     0.36     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.963       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   371.6423   269.1918   256.2299  1071.6855     0.3468    -0.0404     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.1718     5.6864   484.8129   483.8335    40.5222    46.4132    35.4000   -11.0132

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   256.6891    62.7940   248.8900  1078.0087     0.2381     0.4829     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.1633     5.9284   490.5721   482.4895   554.9116     0.0277     0.5719

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   255.3411     0.0000   255.3411  1078.0337     0.2369     0.4592     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.9093   490.6289   483.5214     0.0000     0.0600     0.0745     0.4430
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8264     6.1409     1.0981   495.8234    15.0965   172.8784     1.3401

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  94680.711       0.618     167.094  315130.844   0.350875E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =13.418   EfDer =  0.971    SH =  0.482358E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
    31.230    2174.106       6.141     495.822       1.000       1.000       0.980
 W Kg/sec =  14.195  Wdry =  31.079  WH2O = 0.151  lbm/sec   H2O =   2.521g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    73.090    2223.696       1.375       0.252      53.505      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57544.738   24457.607       2.752     590.487     214.567     468.502       2.183

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   233.87    -0.08   233.87     0.22     0.42   398.77
 MEAN   18.08     0.00    -0.02   233.87    -0.08   233.87     0.22     0.38
 HUB    15.21     0.00    -0.02   233.87    -0.08   233.87     0.22     0.34

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    59.05    46.36    12.69   389.89   454.72     5.95   491.49   486.47    52.48
 MEAN   55.72    42.30    13.42   342.99   415.20     5.95   491.49   486.47    52.48
 HUB    50.99    37.84    13.15   288.57   371.50     5.95   491.49   486.47    52.48

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   327.66   212.88   249.08  1088.42     0.30     2.33     2.04     9.02
 MEAN   18.01   329.35   213.32   250.92  1086.67     0.30     2.40     2.13     7.35
 HUB    15.22   351.22   243.64   252.97  1084.95     0.32     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   387.42   304.15   174.54     0.28  4348.68     0.92     0.89
 MEAN  341.70   281.85   128.37     0.26  3843.40     0.92     0.89     0.89     1.62
 HUB   288.82   256.98    45.18     0.24  3710.15     0.92     0.89

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.68     1.09     6.28   508.90     1.03   500.39   494.37    40.85
 MEAN    6.62     1.08     6.22   507.38     1.02   498.78   493.76    43.03
 HUB     6.60     1.08     6.15   506.98     1.02   497.20   494.05    45.27

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    40.52    35.02    31.50     3.52     0.93     0.50     1.40
 MEAN   40.37    27.09    23.50     3.59     0.94     0.48     1.63
 HUB    43.92    10.13     6.50     3.63     0.94     0.47     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.971       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   354.1971   213.9222   282.2993  1085.5724     0.3263    -0.1192     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   6.6316     6.1680   497.8172   494.5274    44.7103    37.1543    30.6000    -6.5543

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   275.0645    58.3156   268.8118  1089.8561     0.2524     0.3084     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     6.6283     6.3459   501.7609   493.1890   491.5697     0.0178     0.4127

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   284.7551     0.0000   284.7551  1089.3735     0.2614     0.3124     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.3128	501.3326	493.7620	0.0000	0.0600	0.0509	0.2294

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8498	6.6144	1.0771	507.7519	11.9310	200.0176	1.5505

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
75335.297	0.502	132.953	288427.938	0.536700E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =10.989 EfDer = 0.986 SH = 0.609419E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.230	2174.106	6.614	507.751	1.000	1.000	0.980

W Kg/sec = 14.195 Wdry = 31.039 WH2O = 0.190 lbm/sec H2O = 3.345g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.669	2197.420	1.374	0.253	53.546	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54801.793	24445.197	2.704	545.479	201.755	424.468	2.104

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	241.10	-0.08	241.10	0.22	0.41	384.85
MEAN	17.74	0.00	-0.02	241.10	-0.08	241.10	0.22	0.38	
HUB	15.05	0.00	-0.02	241.10	-0.08	241.10	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.66	46.36	11.30	380.78	450.76	6.40	503.16	494.61	45.06
MEAN	54.39	43.40	10.99	336.55	414.07	6.40	503.16	494.61	45.06
HUB	49.83	38.84	10.99	285.54	373.78	6.40	503.16	494.61	45.06

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	322.51	195.39	256.59	1099.82	0.29	2.26	1.98	8.75
MEAN	17.51	326.23	199.43	258.18	1098.39	0.30	2.34	2.07	6.78
HUB	14.85	350.24	234.73	259.95	1097.00	0.32	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	375.85	313.69	180.46	0.29	3872.38	0.92	0.90		
MEAN	332.15	290.30	132.72	0.26	3492.74	0.92	0.90	0.90	1.56
HUB	281.74	264.16	47.01	0.24	3487.00	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.13	1.08	6.72	519.35	1.02	511.14	501.26	36.57
MEAN	7.08	1.07	6.67	518.21	1.02	509.81	500.89	38.08
HUB	7.08	1.07	6.60	518.19	1.02	508.51	501.39	39.59

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.29	35.12	31.50	3.62	0.93	0.46	1.40
MEAN	37.68	27.21	23.50	3.71	0.94	0.45	1.62
HUB	42.08	10.25	6.50	3.75	0.94	0.45	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.986	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	352.7383	200.7348	290.0514	1097.2224	0.3215	-0.1295	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.0906	6.6093	508.7643	501.6800	39.5585	34.6858	31.5000	-3.1858

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	287.3254	62.6781	280.4057	1100.7633	0.2610	0.2376	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.0889	6.7663	512.0605	500.4946	451.3937	0.0138	0.3772

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	291.8998	0.0000	291.8998	1100.4989	0.2652	0.2840	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7460	511.8259	500.7963	0.0000	0.0600	0.0401	0.1903

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8730	7.0776	1.0700	518.5450	10.8331	209.2292	1.6219

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
68674.586	0.486	121.198	288826.250	0.658625E-02

Melt Ratio at Stator LE, Throat, TE
0.93559E-01 0.13859E+00 0.28793E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.971 EfDer = 0.996 SH = 0.699680E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.230	2174.106	7.078	518.531	1.000	1.000	0.980

W Kg/sec = 14.195 Wdry = 31.011 WH2O = 0.219 lbm/sec H2O = 4.021g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
64.853	2174.431	1.373	0.254	53.575	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52342.805	24436.350	2.692	513.330	190.653	395.845	2.076

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	244.71	-0.08	244.71	0.22	0.40	365.46
MEAN	16.97	0.00	-0.02	244.71	-0.08	244.71	0.22	0.37	
HUB	14.32	0.00	-0.02	244.71	-0.08	244.71	0.22	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	56.20	46.36	9.84	365.41	439.86	6.84	513.82	500.81	37.14
MEAN	52.77	43.80	8.97	321.98	404.49	6.84	513.82	500.81	37.14
HUB	48.00	37.84	10.16	271.69	365.71	6.84	513.82	500.81	37.14

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	313.09	175.23	259.46	1109.89	0.28	2.16	1.89	8.34
MEAN	16.57	316.98	180.06	260.87	1108.65	0.29	2.24	1.97	6.35
HUB	13.89	339.87	215.99	262.41	1107.44	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	358.20	317.49	182.97	0.29	3310.00	0.92	0.91		
MEAN	314.45	293.45	134.39	0.26	2985.74	0.92	0.91	0.91	1.50
HUB	263.53	266.68	47.54	0.24	3001.34	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.54	1.07	7.14	528.40	1.02	520.68	505.93	30.70
MEAN	7.49	1.06	7.09	527.43	1.02	519.52	505.64	31.75
HUB	7.50	1.06	7.03	527.48	1.02	518.38	506.10	32.80

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	34.03	35.19	31.50	3.69	0.93	0.42	1.40
MEAN	34.62	27.26	23.50	3.76	0.93	0.41	1.62
HUB	39.46	10.27	6.50	3.77	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.996	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	338.5242	181.0734	286.0263	1107.7930	0.3056	-0.1045	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.5058	7.0438	518.7318	506.2014	32.5389	32.3365	32.4000	0.0635

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	288.9481	64.8026	281.5876	1110.3810	0.2602	0.1832	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.5050     7.1645   521.1609   505.3148   432.2457     0.0120     0.3468

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   286.4213     0.0000   286.4213  1110.4341     0.2579     0.2561     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.1621   521.2163   505.3105     0.0000     0.0600     0.0366     0.1775

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8878     7.4946     1.0589   527.6722     9.2358   230.0817     1.7836

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  58681.129       0.457     103.561  297545.250   0.717359E-02

Melt Ratio at Stator LE, Throat, TE
0.71845E+00 0.79094E+00 0.99381E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 7.135   EfDer =  1.000    SH =  0.782596E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.230    2174.106       7.495     527.660       1.000       1.000       0.980
 W Kg/sec =  14.195  Wdry =  30.985  WH2O = 0.244  lbm/sec   H2O =   4.687g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     61.782    2155.543       1.372       0.254      53.602      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50224.594   24428.203       2.805     509.668     181.713     384.739       2.117

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   236.49    -0.08   236.49     0.21     0.38   344.60
 MEAN    15.91     0.00    -0.02   236.49    -0.08   236.49     0.21     0.34
 HUB     13.07     0.00    -0.02   236.49    -0.08   236.49     0.21     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.77    47.36     8.41   347.58   420.47     7.27   523.27   505.68    31.45
 MEAN    51.94    44.80     7.14   301.91   383.57     7.27   523.27   505.68    31.45
 HUB     46.37    38.84     7.53   247.97   342.72     7.27   523.27   505.68    31.45

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   298.79   161.89   251.13  1118.91     0.27     2.05     1.78     7.43
 MEAN    15.50   300.58   163.04   252.51  1117.63     0.27     2.13     1.86     5.75
 HUB     12.59   318.80   192.66   254.01  1116.37     0.29     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    340.37   308.09   178.47     0.28  2905.88     0.92     0.91
 MEAN   294.03   284.47   130.99     0.25  2528.06     0.92     0.91     0.91     1.48
 HUB    238.87   258.18    46.21     0.23  2426.60     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.92     1.06     7.54   536.32     1.02   529.31   510.60    28.01
 MEAN     7.86     1.05     7.48   535.19     1.01   528.10   510.22    28.97
 HUB      7.85     1.05     7.42   534.89     1.01   526.91   510.45    29.93

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.81    35.40    31.50     3.90     0.93     0.40     1.40
 MEAN    32.85    27.42    23.50     3.92     0.93     0.39     1.64
 HUB     37.18    10.31     6.50     3.81     0.93     0.38     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   331.9006   166.0318   287.3873  1116.2163     0.2973    -0.1917     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.8681     7.4090   526.8274   511.0396    30.2939    30.0162    33.0000     2.9838
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   295.2492    67.4204   287.4484  1118.1117     0.2641     0.0450     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.8660     7.5012   528.6315   510.5194   410.5396     0.0253     0.3155

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   287.2335     0.0000   287.2335  1118.4827     0.2568     0.2310     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.5150   528.9988   510.8878     0.0000     0.0600     0.0397     0.0803

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8762     7.8604     1.0488   535.4654     7.8068   254.9794     1.9766

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  49777.727       0.430      87.848  313895.125   0.879951E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.1139   Tt4 =   535.4654   T1  =   480.7291

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    347149.44    612.6539     79.0296      1.4056      0.8518     14.4343      1.1139     37.3740
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*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 25666 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.619   EfDer =  0.993    SH =  0.269088E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     39.278    1987.623       6.513     491.407       1.000       1.000       0.980
  W Kg/sec =  17.854  Wdry =  39.172  WH2O = 0.106  lbm/sec   H2O =   1.518g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     86.291    2042.061       1.378       0.250      53.436      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  67058.445   30786.734       3.287     831.557     253.010     619.754       2.450

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   193.54    -0.07   193.54     0.18     0.38   367.62
 MEAN    17.06     0.00    -0.02   193.54    -0.07   193.54     0.18     0.33
 HUB     12.51     0.00    -0.02   193.54    -0.07   193.54     0.18     0.27

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     61.60    50.47    11.13   357.83   406.88      6.37   488.42   479.69    35.53
 MEAN    56.82    47.20     9.62   295.91   353.64      6.37   488.42   479.69    35.53
 HUB     48.28    38.62     9.66   216.99   290.81      6.37   488.42   479.69    35.53

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   341.33   215.64   264.59  1082.25      0.32     7.29     6.52    16.04
 MEAN    18.04   353.62   232.50   266.45  1080.73      0.33     7.43     6.80    12.53
 HUB     15.00   393.92   287.31   269.50  1078.45      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    357.83   300.38   142.20     0.28  4449.97      0.92     0.91
 MEAN   312.84   278.30    80.34     0.26  4194.45      0.92     0.91     0.91     1.44
 HUB    260.18   270.86    27.13     0.25  4310.42      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.07     1.09     6.61   503.72     1.03   494.43   489.64    36.78
 MEAN     7.04     1.08     6.54   503.01     1.02   493.04   489.52    38.51
 HUB      7.05     1.08     6.44   503.33     1.02   490.96   490.47    41.23

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.18    28.25    24.20     4.05     0.93     0.41     1.80
 MEAN    41.11    16.78    12.70     4.08     0.94     0.37     2.22
 HUB     46.83    -5.75    -9.30     3.55     0.94     0.25     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.993       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   368.3257   232.0449   286.0401  1080.0819     0.3410    -0.0580     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     7.0477     6.5111   492.5578   490.2345    40.2543    39.0501    35.4000    -3.6501

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   288.8456    70.6604   280.0694  1084.6102     0.2663     0.3482     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     7.0451     6.7115   496.7159   489.2433   554.9116     0.0150     0.4466

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   286.7787     0.0000   286.7787  1084.6866     0.2644     0.3580     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     6.7032   496.8127   490.1497     0.0000     0.0600     0.0412     0.3324
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8707     7.0314     1.0796   503.3531    11.9481   197.9215     1.5343

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  75074.844       0.586     166.638  391011.625   0.403092E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.792   EfDer =  0.999    SH =  0.527807E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     39.278    1987.623       7.031     503.352       1.000       1.000       0.980
 W Kg/sec =  17.854  Wdry =  39.071  WH2O = 0.207  lbm/sec   H2O =   3.093g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.892    2017.696       1.375       0.252      53.519      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64549.129   30755.096       2.486     590.487     237.539     468.502       1.972

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   262.33    -0.09   262.33     0.24     0.41   361.83
 MEAN    18.08     0.00    -0.02   262.33    -0.09   262.33     0.24     0.38
 HUB     15.21     0.00    -0.02   262.33    -0.09   262.33     0.24     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.65    46.36     7.29   356.45   442.65     6.76   497.91   492.75    50.53
 MEAN    50.09    42.30     7.79   313.57   408.90     6.76   497.91   492.75    50.53
 HUB     45.17    37.84     7.33   263.82   372.11     6.76   497.91   492.75    50.53

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   322.77   156.19   282.47  1092.10      0.30     2.33     2.04     9.02
 MEAN    18.01   329.22   167.18   283.62  1091.20      0.30     2.40     2.13     7.35
 HUB     15.22   355.74   212.98   284.94  1090.33      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    354.19   344.95   198.01     0.32  3191.16      0.92     0.91
 MEAN   312.39   318.63   145.21     0.29  3012.48      0.92     0.91     0.91     1.39
 HUB    264.05   289.48    51.06     0.27  3243.63      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.45     1.06     7.02   512.11     1.02   503.87   498.14    43.41
 MEAN     7.43     1.06     6.98   511.62     1.02   503.04   498.06    44.55
 HUB      7.46     1.06     6.94   512.26     1.02   502.24   498.90    45.66

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.94    35.03    31.50     3.53     0.93     0.35     1.40
 MEAN    30.52    27.11    23.50     3.61     0.93     0.35     1.63
 HUB     36.78    10.16     6.50     3.66     0.93     0.37     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   360.9959   167.6460   319.7075  1089.6940     0.3313    -0.1605     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.4402     6.9050   501.6906   499.0080    46.8047    27.6713    30.6000     2.9287

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   313.8390    66.5361   306.7048  1092.4187     0.2873     0.1128     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4384     7.0313   504.2078   498.1248   491.5697     0.0140     0.2664

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   324.9582     0.0000   324.9582  1091.7985     0.2976     0.1614     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9914	503.6474	498.6872	0.0000	0.0600	0.0395	0.0273

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8730	7.4265	1.0562	511.9957	8.6448	246.3412	1.9096

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
54663.969	0.436	121.334	360808.844	0.576167E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.14225E-02

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.895 EfDer = 0.997 SH = 0.627449E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.278	1987.623	7.426	511.992	1.000	1.000	0.980

W Kg/sec = 17.854 Wdry = 39.031 WH2O = 0.246 lbm/sec H2O = 3.808g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
77.243	2000.594	1.373	0.253	53.552	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62338.039	30742.842	2.403	545.479	226.977	424.468	1.870

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	274.26	-0.09	274.26	0.25	0.41	350.38
MEAN	17.74	0.00	-0.02	274.26	-0.09	274.26	0.25	0.38	
HUB	15.05	0.00	-0.02	274.26	-0.09	274.26	0.25	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.77	46.36	5.41	348.12	443.25	7.11	506.06	498.83	46.21
MEAN	48.29	43.40	4.89	307.68	412.24	7.11	506.06	498.83	46.21
HUB	43.60	38.84	4.76	261.05	378.70	7.11	506.06	498.83	46.21

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	325.01	135.06	295.61	1099.60	0.30	2.26	1.98	8.75
MEAN	17.51	332.45	150.65	296.36	1099.08	0.30	2.34	2.07	6.78
HUB	14.85	360.07	203.17	297.28	1098.57	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	343.61	361.77	208.55	0.33	2677.45	0.92	0.91		
MEAN	303.66	333.52	153.00	0.30	2639.12	0.92	0.91	0.91	1.33
HUB	257.58	302.22	54.41	0.28	3018.44	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.79	1.05	7.34	519.31	1.01	510.98	503.06	40.54
MEAN	7.78	1.05	7.31	519.20	1.01	510.48	503.17	41.14
HUB	7.84	1.06	7.28	520.24	1.02	510.01	504.19	41.69

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	24.55	35.20	31.50	3.70	0.93	0.29	1.40
MEAN	26.95	27.31	23.50	3.81	0.92	0.30	1.62
HUB	34.35	10.37	6.50	3.87	0.92	0.34	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.997	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	366.5457	151.6434	333.7066	1097.4303	0.3340	-0.1730	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.7978	7.2285	508.9817	504.1311	43.1793	24.4381	31.5000	7.0619

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	333.2354	72.6931	325.2100	1099.3984	0.3031	0.0162	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.7933	7.3199	510.8115	503.4194	451.3937	0.0190	0.2243

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	338.8701	0.0000	338.8701	1099.0408	0.3083	0.1070	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.2894	510.4852	503.6435	0.0000	0.0600	0.0532	-0.0461

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8544	7.7766	1.0471	519.5396	7.5938	266.2502	2.0640

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
48152.688	0.408	106.881	363558.125	0.654037E-02

Melt Ratio at Stator LE, Throat, TE
0.26562E+00 0.31312E+00 0.45032E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 2.343 EfDer = 0.980 SH = 0.676168E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.278	1987.623	7.777	519.526	1.000	1.000	0.980

W Kg/sec = 17.854 Wdry = 39.012 WH2O = 0.266 lbm/sec H2O = 4.227g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
74.307	1986.016	1.373	0.254	53.568	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60518.188	30736.840	2.350	513.330	218.417	395.845	1.812

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	282.94	-0.10	282.94	0.26	0.40	333.79
MEAN	16.97	0.00	-0.02	282.94	-0.10	282.94	0.26	0.37	
HUB	14.32	0.00	-0.02	282.94	-0.10	282.94	0.26	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.75	46.36	3.39	334.07	437.86	7.43	513.22	502.99	39.86
MEAN	46.14	43.80	2.34	294.36	408.36	7.43	513.22	502.99	39.86
HUB	41.29	37.84	3.45	248.38	376.56	7.43	513.22	502.99	39.86

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	324.10	111.82	304.20	1105.99	0.29	2.16	1.89	8.34
MEAN	16.57	330.99	129.43	304.64	1105.71	0.30	2.24	1.97	6.35
HUB	13.89	356.77	184.62	305.29	1105.44	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	327.48	372.89	215.66	0.34	2113.00	0.92	0.90		
MEAN	287.48	343.20	158.05	0.31	2146.80	0.92	0.90	0.90	1.28
HUB	240.93	310.44	56.30	0.28	2565.82	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.06	1.04	7.61	525.28	1.01	517.00	506.12	35.83
MEAN	8.07	1.04	7.59	525.37	1.01	516.74	506.29	36.10
HUB	8.13	1.05	7.57	526.52	1.01	516.49	507.27	36.34

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	20.18	35.33	31.50	3.83	0.93	0.24	1.40
MEAN	23.02	27.42	23.50	3.92	0.91	0.26	1.62
HUB	31.16	10.45	6.50	3.95	0.91	0.30	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.980	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	359.1733	130.1572	334.7605	1104.4169	0.3252	-0.1412	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0823	7.5217	515.5474	507.0304	37.4084	21.2464	32.4000	11.1536

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	340.9933	76.4748	332.3071	1105.4740	0.3085	-0.0476	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.0742	7.5666	516.5353	506.6286	432.2457	0.0263	0.1881

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	338.5596	0.0000	338.5596	1105.5659	0.3062	0.0544	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.5522	516.6233	506.5775	0.0000	0.0600	0.0754	-0.0764

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7988	8.0498	1.0351	525.6509	6.1971	305.2563	2.3663

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
39344.324	0.367	87.330	376733.781	0.687332E-02

Melt Ratio at Stator LE, Throat, TE
0.81885E+00 0.87129E+00 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-0.021 EfDer = 0.950 SH = 0.748718E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.278	1987.623	8.050	525.645	1.000	1.000	0.980

W Kg/sec = 17.854 Wdry = 38.984 WH2O = 0.294 lbm/sec H2O = 4.793g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.206	1974.437	1.372	0.254	53.591	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
59093.355	30727.879	2.400	509.668	212.331	384.739	1.812

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	278.25	-0.10	278.25	0.25	0.38	315.65
MEAN	15.91	0.00	-0.02	278.25	-0.10	278.25	0.25	0.35	
HUB	13.07	0.00	-0.02	278.25	-0.10	278.25	0.25	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	48.80	47.36	1.44	317.77	422.45	7.71	519.56	506.59	36.40
MEAN	44.78	44.80	-0.02	276.02	392.00	7.71	519.56	506.59	36.40
HUB	39.18	38.84	0.34	226.70	358.97	7.71	519.56	506.59	36.40

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	314.97	96.56	299.80	1111.81	0.28	2.05	1.78	7.43
MEAN	15.50	320.31	111.65	300.22	1111.52	0.29	2.13	1.86	5.75
HUB	12.59	341.89	162.38	300.87	1111.24	0.31	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	311.17	368.70	214.61	0.33	1734.04	0.92	0.87		
MEAN	268.81	338.87	157.16	0.30	1731.83	0.92	0.87	0.87	1.25
HUB	218.38	306.04	56.00	0.28	2045.60	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.28	1.03	7.84	530.37	1.01	522.57	509.60	34.71
MEAN	8.28	1.03	7.83	530.37	1.01	522.30	509.70	34.97
HUB	8.33	1.03	7.81	531.22	1.01	522.03	510.46	35.21

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	17.85	35.60	31.50	4.10	0.93	0.21	1.40
MEAN	20.40	27.63	23.50	4.13	0.90	0.22	1.64
HUB	28.36	10.54	6.50	4.04	0.90	0.26	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.950	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	361.2254	113.6972	342.8655	1109.4551	0.3256	-0.2448	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2890	7.7133	520.4073	510.8010	37.1862	18.3460	33.0000	14.6540

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   355.8295    81.2540   346.4281  1109.7723     0.3206    -0.2506     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.2661     7.7086   520.7134   510.7415   410.5396     0.0686     0.1555

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   346.1987     0.0000   346.1987  1110.3296     0.3118     0.0196     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.7245   521.2456   510.8608     0.0000     0.0600     0.0983    -0.2168

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.7073     8.2521     1.0251   530.6541     5.0090   353.0594     2.7369

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  31895.590       0.329      70.796  399344.688   0.815354E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.0799   Tt4 =   530.6541   T1  =   491.4065

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    249131.42    552.9795     86.2905      1.2671      0.8322      9.6194      1.0799     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 20047 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 6.077   EfDer =  0.999    SH =  0.364448E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     48.266    1812.330       7.939     506.406       1.000       1.000       0.980
 W Kg/sec =  21.939  Wdry =  48.090  WH2O = 0.176  lbm/sec   H2O =   2.429g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     88.303    1834.192       1.377       0.251      53.467      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  69759.617   37817.164       3.210     831.557     259.074     619.754       2.392

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   201.34    -0.07   201.34     0.18     0.35   330.20
 MEAN    17.06     0.00    -0.02   201.34    -0.07   201.34     0.18     0.31
 HUB     12.51     0.00    -0.02   201.34    -0.07   201.34     0.18     0.26

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.33    50.47     7.86   326.27   383.45     7.76   503.18   491.24    32.64
 MEAN    53.28    47.20     6.08   269.82   336.71     7.76   503.18   491.24    32.64
 HUB     44.51    38.62     5.89   197.85   282.33     7.76   503.18   491.24    32.64

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.39   176.67   278.01  1095.66      0.30     7.29     6.52    16.04
 MEAN    18.04   343.93   200.82   279.22  1094.76      0.31     7.43     6.80    12.53
 HUB     15.00   387.05   265.39   281.73  1093.02      0.35     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    326.27   315.71   149.61     0.29  3646.04      0.92     0.91
 MEAN   285.25   291.71    84.43     0.27  3623.10      0.92     0.91     0.91     1.29
 HUB    237.23   283.14    28.15     0.26  3981.69      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.43     1.06     7.93   515.58     1.02   506.95   499.24    35.93
 MEAN     8.43     1.06     7.88   515.52     1.02   506.11   499.48    36.86
 HUB      8.48     1.07     7.78   516.42     1.02   504.51   500.74    38.70

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.43    28.29    24.20     4.09     0.93     0.30     1.80
 MEAN    35.72    16.83    12.70     4.13     0.93     0.27     2.22
 HUB     43.29    -5.71    -9.30     3.59     0.93     0.17     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   360.7246   200.4254   299.9198  1093.9731     0.3297    -0.0719     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.4388     7.8367   505.5172   500.2537    38.6191    33.7534    35.4000     1.6466

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   304.9046    74.5890   295.6405  1097.1298     0.2779     0.2414     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.4369     8.0031   508.4606   499.5267   554.9116     0.0133     0.3598

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   302.5833     0.0000   302.5833  1097.1910     0.2758     0.2656     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.9966   508.5397   500.1643     0.0000     0.0600     0.0375     0.2302
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8768     8.4228     1.0609   515.7946     9.4317   219.2038     1.6993

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  59473.793       0.559     162.217  470427.344   0.510140E-02

Melt Ratio at Stator LE, Throat, TE
0.14846E-01 0.55932E-01 0.26416E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.664   EfDer =  0.990    SH =  0.589823E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     48.266    1812.330       8.423     515.770       1.000       1.000       0.980
 W Kg/sec =  21.939  Wdry =  47.981  WH2O = 0.285  lbm/sec   H2O =   4.030g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     84.000    1817.427       1.374       0.253      53.540      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68043.922   37783.211       2.393     590.487     246.772     468.502       1.899

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   276.55    -0.10   276.55     0.25     0.39   325.91
 MEAN    18.08     0.00    -0.02   276.55    -0.10   276.55     0.25     0.36
 HUB     15.21     0.00    -0.02   276.55    -0.10   276.55     0.25     0.33

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.61    46.36     3.25   325.01   426.82     8.07   509.73   501.46    42.91
 MEAN    45.96    42.30     3.66   285.92   397.85     8.07   509.73   501.46    42.91
 HUB     41.03    37.84     3.19   240.55   366.59     8.07   509.73   501.46    42.91

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   321.07   111.17   301.21  1102.12     0.29     2.33     2.04     9.02
 MEAN    18.01   328.30   129.78   301.56  1101.90     0.30     2.40     2.13     7.35
 HUB     15.22   354.77   186.00   302.11  1101.69     0.32     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    322.95   368.21   211.78     0.33  2272.15     0.92     0.91
 MEAN   284.84   339.09   155.05     0.31  2339.10     0.92     0.91     0.91     1.26
 HUB    240.76   307.03    54.76     0.28  2832.91     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.73     1.04     8.24   521.43     1.01   513.29   504.80    39.02
 MEAN     8.74     1.04     8.23   521.59     1.01   513.08   505.01    39.25
 HUB      8.81     1.05     8.21   522.83     1.01   512.89   506.05    39.45

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     20.26    35.11    31.50     3.61     0.93     0.23     1.40
 MEAN    23.29    27.21    23.50     3.71     0.92     0.25     1.63
 HUB     31.62    10.27     6.50     3.77     0.92     0.29     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.990       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   364.3388   130.1469   340.3007  1100.1389     0.3312    -0.1901     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.7585     8.1292   511.4564   505.9365    41.2764    20.9292    30.6000     9.6708

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   336.0350    71.2418   328.3963  1101.8055     0.3050    -0.0309     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     8.7512     8.2126   513.0082   505.3423   491.5697     0.0236     0.1719

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   348.3751     0.0000   348.3751  1101.0416     0.3164     0.0386     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1535	512.3013	505.6450	0.0000	0.0600	0.0665	-0.1414

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8216	8.7283	1.0363	521.8826	6.1804	296.2618	2.2966

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
39143.926	0.375	106.766	436585.938	0.606698E-02

Melt Ratio at Stator LE, Throat, TE
0.68668E+00 0.73869E+00 0.88467E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 0.326 EfDer = 0.955 SH = 0.620740E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
48.266	1812.330	8.728	521.865	1.000	1.000	0.980

W Kg/sec = 21.939 Wdry = 47.966 WH2O = 0.300 lbm/sec H2O = 4.327g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
81.537	1806.795	1.373	0.253	53.550	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
66688.438	37778.535	2.277	545.479	239.592	424.468	1.772

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	293.41	-0.10	293.41	0.27	0.39	316.44
MEAN	17.74	0.00	-0.02	293.41	-0.10	293.41	0.27	0.37	
HUB	15.05	0.00	-0.02	293.41	-0.10	293.41	0.27	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	47.26	46.36	0.90	317.42	432.33	8.32	515.07	504.88	38.26
MEAN	43.73	43.40	0.33	280.54	406.02	8.32	515.07	504.88	38.26
HUB	39.06	38.84	0.22	238.02	377.88	8.32	515.07	504.88	38.26

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	331.75	86.36	320.31	1106.53	0.30	2.26	1.98	8.75
MEAN	17.51	338.73	110.66	320.15	1106.73	0.31	2.34	2.07	6.78
HUB	14.85	365.14	175.34	320.29	1106.94	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	313.31	392.56	226.95	0.35	1712.84	0.92	0.87		
MEAN	276.88	360.73	166.22	0.33	1939.00	0.92	0.87	0.87	1.20
HUB	234.86	325.77	59.53	0.29	2605.25	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.96	1.03	8.43	526.13	1.01	517.45	507.70	36.74
MEAN	8.99	1.03	8.44	526.70	1.01	517.64	508.06	36.51
HUB	9.08	1.04	8.43	528.36	1.01	517.84	509.26	36.25

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	15.09	35.32	31.50	3.82	0.93	0.16	1.40
MEAN	19.07	27.44	23.50	3.94	0.90	0.20	1.62
HUB	28.70	10.53	6.50	4.03	0.90	0.26	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.955	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	377.9530	111.3820	361.1683	1104.7274	0.3421	-0.2045	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.0052	8.3170	515.7980	509.1885	38.8771	17.1394	31.5000	14.3606

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	362.8484	79.1529	354.1098	1105.6664	0.3282	-0.1326	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.9906	8.3559	516.6822	508.9384	451.3937	0.0353	0.1273

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	369.9199	0.0000	369.9199	1105.2207	0.3347	-0.0262	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.2990	516.2756	509.4147	0.0000	0.0600	0.0963	-0.2311

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7025	8.9553	1.0260	527.0617	5.1965	333.7129	2.5869

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
32954.918	0.336	89.886	442100.531	0.672677E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =-2.730 EfDer = 0.900 SH = 0.742183E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
48.266	1812.330	8.955	527.060	1.000	1.000	0.980

W Kg/sec = 21.939 Wdry = 47.907 WH2O = 0.358 lbm/sec H2O = 5.235g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
79.864	1797.896	1.372	0.254	53.589	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
65907.953	37760.125	2.186	513.330	234.843	395.845	1.686

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	308.13	-0.11	308.13	0.28	0.39	302.17
MEAN	16.97	0.00	-0.02	308.13	-0.11	308.13	0.28	0.37	
HUB	14.32	0.00	-0.02	308.13	-0.11	308.13	0.28	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	44.68	46.36	-1.68	304.61	433.35	8.50	519.60	509.45	39.71
MEAN	41.07	43.80	-2.73	268.40	408.70	8.50	519.60	509.45	39.71
HUB	36.33	37.84	-1.51	226.48	382.47	8.50	519.60	509.45	39.71

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	340.91	59.40	335.69	1109.83	0.31	2.16	1.89	8.34
MEAN	16.57	346.27	87.11	335.13	1110.37	0.31	2.24	1.97	6.35
HUB	13.89	369.93	156.87	335.03	1110.90	0.33	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	298.60	412.19	239.20	0.37	1123.54	0.92	0.82		
MEAN	262.13	378.08	175.01	0.34	1445.62	0.92	0.82	0.82	1.15
HUB	219.68	340.86	62.81	0.31	2180.44	0.92	0.82		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.10	1.02	8.53	529.85	1.01	520.72	511.71	39.81
MEAN	9.14	1.02	8.56	530.65	1.01	521.23	512.12	39.20
HUB	9.24	1.03	8.57	532.48	1.01	521.72	513.32	38.57

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	10.03	35.47	31.50	3.97	0.93	0.10	1.40
MEAN	14.57	27.57	23.50	4.07	0.89	0.14	1.62
HUB	25.09	10.62	6.50	4.12	0.89	0.21	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.900	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	379.3403	87.6038	369.0862	1108.6906	0.3422	-0.1682	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1541	8.4552	519.6932	513.1552	41.2633	13.3523	32.4000	19.0477

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	378.2752	84.8361	368.6394	1108.7523	0.3412	-0.1889	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.1321	8.4387	519.7590	513.1959	432.2457	0.0463	0.0904

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	376.6222	0.0000	376.6222	1108.8502	0.3397	-0.0793	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.3997	519.8587	513.3947	0.0000	0.0600	0.1262	-0.2532

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.5167	9.0836	1.0143	530.9962	3.9363	407.3881	3.1580

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
25060.230	0.281	68.353	460744.219	0.801908E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-5.574 EfDer = 0.837 SH = 0.873412E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
48.266	1812.330	9.084	530.994	1.000	1.000	0.980

W Kg/sec = 21.939 Wdry = 47.844 WH2O = 0.422 lbm/sec H2O = 6.199g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
79.029	1791.223	1.370	0.255	53.632	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
65500.777	37740.156	2.191	509.668	232.572	384.739	1.654

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	308.42	-0.11	308.42	0.28	0.38	286.36
MEAN	15.91	0.00	-0.02	308.42	-0.11	308.42	0.28	0.36	
HUB	13.07	0.00	-0.02	308.42	-0.11	308.42	0.28	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	43.22	47.36	-4.14	289.74	423.24	8.62	523.54	513.10	41.24
MEAN	39.23	44.80	-5.57	251.67	398.14	8.62	523.54	513.10	41.24
HUB	33.84	38.84	-5.00	206.71	371.34	8.62	523.54	513.10	41.24

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	339.12	41.45	336.58	1112.95	0.30	2.05	1.78	7.43
MEAN	15.50	342.81	67.95	336.01	1113.55	0.31	2.13	1.86	5.75
HUB	12.59	362.27	135.59	335.94	1114.13	0.33	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	283.73	414.71	242.28	0.37	745.57	0.92	0.77		
MEAN	245.10	379.85	177.15	0.34	1054.78	0.92	0.77	0.77	1.12
HUB	199.12	341.90	63.53	0.31	1708.50	0.92	0.77		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.17	1.01	8.61	532.84	1.00	523.83	514.94	42.18
MEAN	9.21	1.01	8.64	533.61	1.00	524.40	515.29	41.46
HUB	9.29	1.02	8.65	535.23	1.01	524.95	516.30	40.73

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	7.02	35.75	31.50	4.25	0.93	0.05	1.40
MEAN	11.43	27.80	23.50	4.30	0.87	0.10	1.64
HUB	21.98	10.71	6.50	4.21	0.87	0.17	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.837	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	391.2049	69.1981	385.0363	1110.8628	0.3522	-0.2797	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.2131	8.4709	521.9172	516.7477	44.7235	10.1883	33.0000	22.8117

```
    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   402.8957    92.0016   392.2507  1110.0863     0.3629    -0.4258     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1611     8.3798   521.1939   517.0855   410.5396     0.1078     0.0622

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   391.9032     0.0000   391.9032  1110.8091     0.3528    -0.0935     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.4015   521.8792   517.0259     0.0000     0.0600     0.1428    -0.3894

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.3081     9.1403     1.0062   533.8916     2.8967   509.6528     3.9508

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  18514.080       0.230      50.498  490745.313   0.933878E-02

Melt Ratio at Stator LE, Throat, TE
0.10000E+01 0.10000E+01 0.10000E+01
 trTOT =     1.0543   Tt4 =   533.8916   T1  =   506.4063

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    175146.95    477.7191     88.3032      1.1513      0.7180      6.0767     1.0543     37.3740
```

Appendix M: NPSS cycle analysis and compressor code analysis for the descent conditions

NPSS Cycle Analysis: 10μm, 9 g/m^3, ISA +27R

```
**********************************************************************************************************************************
Date:02/15/13    Time:13:36:04    Model:                                  Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 13/ 27/ 1/11    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 473.69    Stator 1 exit: 481.37    Stator 2 inlet: 491.02    Stator 2 exit: 495.99
            Stator 3 inlet: 505.90    Stator 3 exit: 510.41    Stator 4 inlet: 519.64    Stator 4 exit: 523.46
            Stator 5 inlet: 531.01    Stator 5 exit: 534.32            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.87
Fan Bypass Relative Humidity       1.31
LPC Inlet Relative Humidity        1.21
LPC Exit Relative Humidity         0.11
HPC Relative Humidity              0.04
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity            781.11    Fan/LPC Inlet Flow Velocity        188.24
Ambient Static Pressure            2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature       416.97    Fan/LPC Inlet Static Temperature   464.88
Additional Water at LPC Exit     0.0061626
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	27.00	254.87	640.1	1.1047	707.08	8.6946	781.11	9.515	0.736	10.000	1747.5	1653.4	1151.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	254.87	4.267	467.83	-18.66	0.0000	833.73	2.854	416.97	2543.5	0.7800	1.40077	0.0000507	254.86	0.013	0.0001
FS1	Inlet.Fl_O	254.87	4.267	467.83	-18.66	0.0000	833.73	3.892	455.67	4168.2	0.3649	1.40077	0.0000507	254.86	0.013	0.0001
FS12	Splitter.Fl_02	228.58	4.265	467.83	-18.66	0.0000	748.10	3.838	453.93	3531.8	0.3909	1.40077	0.0000507	228.57	0.012	0.0001
FS2	Splitter.Fl_01	26.29	4.265	467.83	-18.66	0.0000	86.04	4.171	464.88	830.5	0.1780	1.40077	0.0000507	26.29	0.001	0.0001
FS14	Fan.Fl_O	228.58	4.825	486.38	-14.21	0.0000	674.26	4.048	462.57	2606.7	0.5069	1.40061	0.0000507	228.57	0.012	0.0001
FS23	LPC.Fl_O	26.29	6.677	544.44	-0.29	0.0000	59.28	6.390	537.64	412.6	0.2516	1.39985	0.0000507	26.29	0.001	0.0001
FS24	VaporIN.Fl_O	26.45	6.677	552.66	-33.63	0.0000	60.09	6.380	545.53	412.6	0.2560	1.39887	0.0062133	26.29	0.163	0.0062
FS25	Bleed2.Fl_O	23.81	6.677	552.66	-33.63	0.0000	54.09	6.439	546.96	412.6	0.2286	1.39887	0.0062133	23.66	0.147	0.0062
FS3	HPC.Fl_O	22.65	40.596	1000.05	75.91	0.0000	11.39	35.690	965.15	49.7	0.4356	1.37975	0.0062133	22.51	0.140	0.0062
FS36	Bleed3.Fl_O	17.56	40.596	1000.05	75.91	0.0000	8.82	37.782	980.45	49.3	0.3242	1.37975	0.0062133	17.45	0.108	0.0062
FS4	Burner.Fl_O	17.75	39.662	1747.45	63.44	0.0113	12.07	37.446	1722.72	74.6	0.2950	1.32906	0.0062133	17.45	0.108	0.0197
FS45	HPT.Fl_O	23.73	9.517	1155.18	-42.70	0.0084	54.67	8.617	1124.88	265.4	0.3840	1.36413	0.0062133	23.38	0.145	0.0163
FS49	LPT.Fl_O	24.00	3.263	904.96	-104.42	0.0083	142.80	3.071	889.97	860.2	0.2976	1.37997	0.0062133	23.66	0.147	0.0162
FS5	TEGV.Fl_O	24.00	3.263	905.03	-104.42	0.0083	142.80	3.071	890.04	860.2	0.2976	1.37997	0.0062133	23.66	0.147	0.0162
FS8	Core_Nozz.Fl_O	24.00	3.263	905.10	-104.42	0.0083	142.81	2.854	872.27	613.4	0.4444	1.37996	0.0062133	23.66	0.147	0.0162
FS17	FanDuctLkg.Fl_O	228.58	4.825	486.38	-14.21	0.0000	674.26	4.048	462.57	2606.7	0.5069	1.40061	0.0000507	228.57	0.012	0.0001
FS171	Bleed15.Fl_O	231.23	4.825	487.14	-14.44	0.0000	682.60	3.914	458.85	2481.9	0.5548	1.40059	0.0001208	231.20	0.028	0.0001
FS172	FanDuct.Fl_O	231.23	4.825	487.14	-14.44	0.0000	682.60	3.914	458.85	2481.9	0.5548	1.40059	0.0001208	231.20	0.028	0.0001
FS173	Byp_Nozz.Fl_O	231.23	4.825	487.14	-14.44	0.0000	682.60	2.854	419.19	2006.9	0.8993	1.40059	0.0001208	231.20	0.028	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	748.10	1.131	0.9059	2577.527	1.0397	0.9075	-1437.9	1547.91	54.70
LPC	86.04	1.566	0.8352	2577.527	1.1638	0.8453	-683.4	7.00	3.80
HPC	54.09	6.080	0.8183	8960.406	1.8095	0.8569	-3600.2	61.59	58.25
HPT	12.07	4.167	0.8767	221.263	1.3642	0.8546	3600.2		
LPT	54.67	2.917	0.8553	72.024	1.2747	0.8357	2121.3		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	869.22	1.128	0.9077	2552.950	0.0415	0.8607	1.0235	0.9980	0.9905
LPC	74.31	1.526	0.7803	0.681	0.0000	1.1579	1.0753	1.0703	0.0003
HPC	49.19	5.840	0.8267	8721.527	10.9614	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.080	0.8767	1.330	4.0796	12.6299	0.9723	1.0000	0.0003
LPT	0.84	2.442	0.8617	0.810	2.4416	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2543.48	6187.7
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2976	860.21
FanDuct	0.0000	0.5548	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.6946	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9249.3	2044.3	3600.2
LP_Shaft	2447.9	4551.3	2121.3

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	0.8761	778.37	21.14	9.517
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.2785	778.37	21.14	3.263
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	755.95	15.66	14.140
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	894.28	49.62	27.707
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	755.95	15.66	14.140
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	1000.05	75.91	40.596
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	755.95	15.66	14.140

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1000	1.0000	1.0000	2.6452	552.66	-33.63	6.677
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	2.7183	1000.05	75.91	39.662
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.3786	1000.05	75.91	22.419
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1000.05	75.91	40.596
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1000.05	75.91	40.596
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1000.05	75.91	40.596
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	486.38	-14.21	4.825
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	486.38	-14.21	4.825
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	486.38	-14.21	4.825
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	486.38	-14.21	4.825

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1747.40	0.9995	0.0230	0.19641	0.01126

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.143	0.9801	1.0000	0.9800	613.40	0.444	627.6	468.2
Byp_Nozz	1.690	0.9800	1.0000	0.9800	2006.86	0.899	884.9	6359.6

```
**********************************************************************************************************************************
Date:02/15/13    Time:13:36:29    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 39/ 2/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 467.03    Stator 1 exit: 474.23    Stator 2 inlet: 483.26    Stator 2 exit: 487.89
            Stator 3 inlet: 497.16    Stator 3 exit: 501.36    Stator 4 inlet: 510.00    Stator 4 exit: 513.56
            Stator 5 inlet: 520.63    Stator 5 exit: 523.71            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.35
Fan Bypass Relative Humidity       1.69
LPC Inlet Relative Humidity        1.54
LPC Exit Relative Humidity         0.15
HPC Relative Humidity              0.05
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          731.04    Fan/LPC Inlet Flow Velocity        181.73
Ambient Static Pressure          2.95    Fan/LPC Inlet Static Pressure        4.11
Ambient Static Temperature     416.97    Fan/LPC Inlet Static Temperature   458.77
Additional Water at LPC Exit   0.0055688
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.730	38334.0	27.00	247.99	626.9	1.0745	673.55	8.7804	731.04	9.234	0.763	10.000	1719.3	1625.8	1133.6

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	247.99	4.201	461.52	-20.16	0.0000	818.27	2.947	416.97	2561.0	0.7300	1.40081	0.0000491	247.98	0.012	0.0000
FS1	Inlet.Fl_O	247.99	4.201	461.52	-20.16	0.0000	818.27	3.847	450.03	4168.2	0.3570	1.40081	0.0000491	247.98	0.012	0.0000
FS12	Splitter.Fl_02	222.64	4.199	461.52	-20.16	0.0000	734.98	3.796	448.37	3531.8	0.3826	1.40081	0.0000491	222.63	0.011	0.0000
FS2	Splitter.Fl_01	25.36	4.199	461.52	-20.16	0.0000	83.71	4.112	458.77	830.5	0.1730	1.40081	0.0000491	25.35	0.001	0.0000
FS14	Fan.Fl_O	222.64	4.718	478.80	-16.02	0.0000	666.30	3.981	456.09	2606.7	0.4985	1.40067	0.0000491	222.63	0.011	0.0000
FS23	LPC.Fl_O	25.36	6.436	533.24	-2.97	0.0000	58.71	6.164	526.71	412.6	0.2490	1.40002	0.0000491	25.35	0.001	0.0000
FS24	VaporIN.Fl_O	25.50	6.436	540.79	-33.10	0.0000	59.45	6.156	533.97	412.6	0.2529	1.39914	0.0056179	25.35	0.142	0.0056
FS25	Bleed2.Fl_O	22.95	6.436	540.79	-33.10	0.0000	53.51	6.211	535.34	412.6	0.2259	1.39914	0.0056179	22.82	0.128	0.0056
FS3	HPC.Fl_O	21.83	38.794	977.14	73.53	0.0000	11.35	34.141	943.22	49.7	0.4336	1.38124	0.0056179	21.71	0.122	0.0056
FS36	Bleed3.Fl_O	16.92	38.794	977.14	73.53	0.0000	8.80	36.123	958.07	49.3	0.3228	1.38124	0.0056179	16.83	0.095	0.0056
FS4	Burner.Fl_O	17.11	37.901	1719.25	61.22	0.0111	12.08	35.783	1694.83	74.6	0.2949	1.33055	0.0056179	16.83	0.095	0.0190
FS45	HPT.Fl_O	22.87	9.209	1137.76	-42.06	0.0083	54.05	8.361	1108.66	265.4	0.3784	1.36541	0.0056179	22.55	0.127	0.0156
FS49	LPT.Fl_O	23.13	3.313	901.95	-100.03	0.0082	135.33	3.139	888.66	860.2	0.2803	1.38030	0.0056179	22.82	0.128	0.0155
FS5	TEGV.Fl_O	23.13	3.313	902.02	-100.03	0.0082	135.34	3.139	888.73	860.2	0.2803	1.38029	0.0056179	22.82	0.128	0.0155
FS8	Core_Nozz.Fl_O	23.13	3.313	902.09	-100.03	0.0082	135.34	2.947	873.41	613.4	0.4150	1.38029	0.0056179	22.82	0.128	0.0155
FS17	FanDuctLkg.Fl_O	222.64	4.718	478.80	-16.02	0.0000	666.30	3.981	456.09	2606.7	0.4985	1.40067	0.0000491	222.63	0.011	0.0000
FS171	Bleed15.Fl_O	225.19	4.718	479.50	-16.22	0.0000	674.43	3.856	452.59	2481.9	0.5447	1.40066	0.0001118	225.16	0.025	0.0001
FS172	FanDuct.Fl_O	225.19	4.718	479.50	-16.22	0.0000	674.43	3.856	452.59	2481.9	0.5447	1.40066	0.0001118	225.16	0.025	0.0001
FS173	Byp_Nozz.Fl_O	225.19	4.718	479.50	-16.22	0.0000	674.43	2.947	419.08	2006.9	0.8481	1.40066	0.0001118	225.16	0.025	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	734.98	1.124	0.9051	2513.129	1.0374	0.9067	-1304.2	2083.10	54.58
LPC	83.71	1.533	0.8357	2513.129	1.1554	0.8453	-616.9	6.80	3.37
HPC	53.51	6.028	0.8175	8941.716	1.8069	0.8562	-3378.0	61.47	58.08
HPT	12.08	4.116	0.8754	220.202	1.3611	0.8533	3378.0		
LPT	54.05	2.780	0.8497	70.281	1.2595	0.8303	1921.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	853.97	1.121	0.9069	2489.166	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	71.52	1.497	0.7773	0.664	0.0000	1.1704	1.0709	1.0751	0.0003
HPC	48.66	5.791	0.8260	8703.336	10.9759	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.029	0.8754	1.323	4.0293	12.6299	0.9723	1.0000	0.0003
LPT	0.83	2.339	0.8560	0.791	2.3386	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2561.00	5634.7
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2803	860.21
FanDuct	0.0000	0.5447	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7804	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9130.4	1943.1	3378.0
LP_Shaft	2370.6	4256.3	1921.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8445	760.80	20.21	9.209
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2685	760.80	20.21	3.313
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	738.93	14.88	13.555
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	873.88	47.94	26.498
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	738.93	14.88	13.555
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	977.14	73.53	38.794
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	738.93	14.88	13.555

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5497	540.79	-33.10	6.436
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6202	977.14	73.53	37.901
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.2927	977.14	73.53	21.489
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	977.14	73.53	38.794
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	977.14	73.53	38.794
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	977.14	73.53	38.794
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	478.80	-16.02	4.718
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	478.80	-16.02	4.718
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	478.80	-16.02	4.718
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	478.80	-16.02	4.718

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1719.20	0.9995	0.0230	0.18710	0.01112

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.124	0.9801	1.0000	0.9800	613.40	0.415	586.4	421.6
Byp_Nozz	1.601	0.9800	1.0000	0.9800	2006.86	0.848	834.4	5840.0

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**********************************************************************************************************************************
Date:02/15/13    Time:13:36:53    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 39/ 2/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 464.96    Stator 1 exit: 471.97    Stator 2 inlet: 480.76    Stator 2 exit: 485.27
            Stator 3 inlet: 494.29    Stator 3 exit: 498.37    Stator 4 inlet: 506.78    Stator 4 exit: 510.23
            Stator 5 inlet: 517.12    Stator 5 exit: 520.10            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.52
Fan Bypass Relative Humidity       1.84
LPC Inlet Relative Humidity        1.66
LPC Exit Relative Humidity         0.16
HPC Relative Humidity              0.05
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity           715.01    Fan/LPC Inlet Flow Velocity        179.23
Ambient Static Pressure           3.09    Fan/LPC Inlet Static Pressure        4.25
Ambient Static Temperature      416.97    Fan/LPC Inlet Static Temperature   456.91
Additional Water at LPC Exit    0.0050613
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.714	37357.0	27.00	254.64	639.4	1.0706	684.51	8.8138	715.01	9.110	0.772	10.000	1707.2	1614.2	1126.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	254.64	4.339	459.59	-20.61	0.0000	811.78	3.088	416.97	2565.2	0.7140	1.40083	0.0000469	254.62	0.012	0.0000
FS1	Inlet.Fl_O	254.64	4.339	459.59	-20.61	0.0000	811.78	3.980	448.35	4168.2	0.3536	1.40083	0.0000469	254.62	0.012	0.0000
FS12	Splitter.Fl_02	228.69	4.337	459.59	-20.61	0.0000	729.43	3.927	446.72	3531.8	0.3791	1.40083	0.0000469	228.68	0.011	0.0000
FS2	Splitter.Fl_01	25.95	4.337	459.59	-20.61	0.0000	82.76	4.249	456.91	830.5	0.1710	1.40083	0.0000469	25.95	0.001	0.0000
FS14	Fan.Fl_O	228.69	4.859	476.37	-16.59	0.0000	662.88	4.110	454.08	2606.7	0.4949	1.40070	0.0000469	228.68	0.011	0.0000
FS23	LPC.Fl_O	25.95	6.588	529.41	-3.87	0.0000	58.47	6.313	522.98	412.6	0.2479	1.40008	0.0000469	25.95	0.001	0.0000
FS24	VaporIN.Fl_O	26.08	6.588	536.31	-31.27	0.0000	59.15	6.305	529.62	412.6	0.2515	1.39928	0.0051081	25.95	0.133	0.0051
FS25	Bleed2.Fl_O	23.47	6.588	536.31	-31.27	0.0000	53.24	6.361	530.96	412.6	0.2246	1.39928	0.0051081	23.35	0.119	0.0051
FS3	HPC.Fl_O	22.33	39.531	968.21	74.17	0.0000	11.34	34.801	934.65	49.7	0.4329	1.38186	0.0051081	22.22	0.113	0.0051
FS36	Bleed3.Fl_O	17.31	39.531	968.21	74.17	0.0000	8.79	36.816	949.34	49.3	0.3224	1.38186	0.0051081	17.22	0.088	0.0051
FS4	Burner.Fl_O	17.50	38.620	1707.24	61.93	0.0110	12.08	36.463	1682.95	74.6	0.2948	1.33124	0.0051081	17.22	0.088	0.0184
FS45	HPT.Fl_O	23.39	9.425	1130.26	-40.18	0.0082	53.83	8.565	1101.60	265.4	0.3764	1.36601	0.0051081	23.08	0.118	0.0151
FS49	LPT.Fl_O	23.66	3.453	899.99	-96.70	0.0081	132.66	3.279	887.29	860.2	0.2742	1.38052	0.0051081	23.35	0.119	0.0150
FS5	TEGV.Fl_O	23.66	3.453	900.06	-96.70	0.0081	132.66	3.279	887.36	860.2	0.2742	1.38052	0.0051081	23.35	0.119	0.0150
FS8	Core_Nozz.Fl_O	23.66	3.453	900.14	-96.70	0.0081	132.67	3.088	872.86	613.4	0.4048	1.38051	0.0051081	23.35	0.119	0.0150
FS17	FanDuctLkg.Fl_O	228.69	4.859	476.37	-16.59	0.0000	662.88	4.110	454.08	2606.7	0.4949	1.40070	0.0000469	228.68	0.011	0.0000
FS171	Bleed15.Fl_O	231.30	4.859	477.05	-16.76	0.0000	670.91	3.983	450.67	2481.9	0.5404	1.40068	0.0001037	231.27	0.024	0.0001
FS172	FanDuct.Fl_O	231.30	4.859	477.05	-16.76	0.0000	670.91	3.983	450.67	2481.9	0.5404	1.40068	0.0001037	231.27	0.024	0.0001
FS173	Byp_Nozz.Fl_O	231.30	4.859	477.05	-16.76	0.0000	670.91	3.088	419.03	2006.9	0.8311	1.40068	0.0001037	231.27	0.024	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	729.43	1.120	0.9047	2486.043	1.0365	0.9062	-1301.3	2440.82	54.52
LPC	82.76	1.519	0.8360	2486.043	1.1519	0.8454	-614.5	6.72	3.30
HPC	53.24	6.000	0.8171	8932.940	1.8053	0.8558	-3416.3	61.51	58.09
HPT	12.08	4.097	0.8748	219.842	1.3601	0.8526	3416.3		
LPT	53.83	2.730	0.8474	69.608	1.2538	0.8282	1915.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	847.52	1.118	0.9065	2462.339	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	70.35	1.485	0.7760	0.657	0.0000	1.1764	1.0696	1.0773	0.0003
HPC	48.42	5.764	0.8255	8694.794	10.9768	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.012	0.8747	1.321	4.0116	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.301	0.8537	0.783	2.3011	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2565.20	5658.9

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2742	860.21
FanDuct	0.0000	0.5404	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8138	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9083.6	1975.3	3416.3
LP_Shaft	2340.2	4299.7	1915.8

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8637	754.02	21.45	9.425
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2746	754.02	21.45	3.453
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.37	16.18	13.836
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	865.96	48.86	27.013
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.37	16.18	13.836
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	968.21	74.17	39.531
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.37	16.18	13.836

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6078	536.31	-31.27	6.588
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6798	968.21	74.17	38.620
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3449	968.21	74.17	21.921
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	968.21	74.17	39.531
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	968.21	74.17	39.531
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	968.21	74.17	39.531
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	476.37	-16.59	4.859
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	476.37	-16.59	4.859
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	476.37	-16.59	4.859
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	476.37	-16.59	4.859

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1707.17	0.9995	0.0230	0.19014	0.01104

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.118	0.9801	1.0000	0.9800	613.40	0.405	571.7	420.4
Byp_Nozz	1.573	0.9800	1.0000	0.9800	2006.86	0.831	817.6	5877.9

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**********************************************************************************************************************************
Date:02/15/13    Time:13:37:09    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 26/ 1/10    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 466.46    Stator 1 exit: 473.03    Stator 2 inlet: 481.24    Stator 2 exit: 485.45
            Stator 3 inlet: 493.88    Stator 3 exit: 497.66    Stator 4 inlet: 505.52    Stator 4 exit: 508.71
            Stator 5 inlet: 515.14    Stator 5 exit: 517.88            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.13
Fan Bypass Relative Humidity       2.36
LPC Inlet Relative Humidity        2.11
LPC Exit Relative Humidity         0.24
HPC Relative Humidity              0.05
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          675.10    Fan/LPC Inlet Flow Velocity        173.34
Ambient Static Pressure          3.58    Fan/LPC Inlet Static Pressure        4.74
Ambient Static Temperature     423.42    Fan/LPC Inlet Static Temperature   458.91
Additional Water at LPC Exit   0.0045890
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.669	34281.0	27.00	275.80	689.1	1.0618	731.69	8.9012	675.10	8.753	0.795	10.000	1696.8	1603.9	1121.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	275.80	4.831	461.41	-20.25	0.0000	791.32	3.578	423.42	2579.3	0.6690	1.40081	0.0000588	275.79	0.016	0.0001
FS1	Inlet.Fl_O	275.80	4.831	461.41	-20.25	0.0000	791.32	4.453	450.77	4168.2	0.3433	1.40081	0.0000588	275.79	0.016	0.0001
FS12	Splitter.Fl_02	247.95	4.829	461.41	-20.25	0.0000	711.76	4.397	449.21	3531.8	0.3682	1.40081	0.0000588	247.93	0.015	0.0001
FS2	Splitter.Fl_01	27.86	4.829	461.41	-20.25	0.0000	79.96	4.738	458.91	830.5	0.1650	1.40081	0.0000588	27.85	0.002	0.0001
FS14	Fan.Fl_O	247.95	5.368	477.11	-16.48	0.0000	651.06	4.576	455.82	2606.7	0.4828	1.40069	0.0000588	247.93	0.015	0.0001
FS23	LPC.Fl_O	27.86	7.146	526.76	-4.58	0.0000	57.73	6.854	520.53	412.6	0.2445	1.40011	0.0000588	27.85	0.002	0.0001
FS24	VaporIN.Fl_O	27.98	7.146	533.05	-29.43	0.0000	58.34	6.847	526.59	412.6	0.2477	1.39939	0.0046478	27.85	0.129	0.0046
FS25	Bleed2.Fl_O	25.18	7.146	533.05	-29.43	0.0000	52.51	6.906	527.88	412.6	0.2213	1.39939	0.0046478	25.07	0.117	0.0046
FS3	HPC.Fl_O	23.96	42.284	959.12	74.50	0.0000	11.33	37.245	925.98	49.7	0.4319	1.38247	0.0046478	23.85	0.111	0.0046
FS36	Bleed3.Fl_O	18.57	42.284	959.12	74.50	0.0000	8.78	39.390	940.48	49.3	0.3217	1.38247	0.0046478	18.49	0.086	0.0046
FS4	Burner.Fl_O	18.77	41.310	1696.80	62.30	0.0110	12.08	39.002	1672.62	74.6	0.2947	1.33183	0.0046478	18.49	0.086	0.0179
FS45	HPT.Fl_O	25.09	10.194	1125.30	-38.32	0.0082	53.28	9.285	1097.42	265.4	0.3718	1.36642	0.0046478	24.78	0.115	0.0146
FS49	LPT.Fl_O	25.39	3.943	907.98	-91.54	0.0081	125.20	3.768	896.68	860.2	0.2574	1.38013	0.0046478	25.07	0.117	0.0145
FS5	TEGV.Fl_O	25.39	3.943	908.05	-91.54	0.0081	125.21	3.768	896.75	860.2	0.2574	1.38013	0.0046478	25.07	0.117	0.0145
FS8	Core_Nozz.Fl_O	25.39	3.943	908.13	-91.54	0.0081	125.21	3.578	884.14	613.3	0.3774	1.38013	0.0046478	25.07	0.117	0.0145
FS17	FanDuctLkg.Fl_O	247.95	5.368	477.11	-16.48	0.0000	651.06	4.576	455.82	2606.7	0.4828	1.40069	0.0000588	247.93	0.015	0.0001
FS171	Bleed15.Fl_O	250.74	5.368	477.74	-16.63	0.0000	658.84	4.445	452.63	2481.9	0.5261	1.40068	0.0001097	250.72	0.028	0.0001
FS172	FanDuct.Fl_O	250.74	5.368	477.74	-16.63	0.0000	658.84	4.445	452.63	2481.9	0.5261	1.40068	0.0001097	250.72	0.028	0.0001
FS173	Byp_Nozz.Fl_O	250.74	5.368	477.74	-16.63	0.0000	658.84	3.578	425.39	2006.9	0.7836	1.40068	0.0001097	250.72	0.028	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	711.76	1.112	0.9037	2405.184	1.0340	0.9051	-1319.9	5050.19	54.11
LPC	79.96	1.480	0.8375	2405.184	1.1416	0.8462	-617.4	6.44	3.07
HPC	52.51	5.917	0.8157	8909.144	1.7993	0.8545	-3613.2	61.84	58.33
HPT	12.08	4.052	0.8741	219.259	1.3570	0.8520	3613.2		
LPT	53.28	2.585	0.8423	67.626	1.2371	0.8237	1937.3		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	826.99	1.109	0.9055	2382.251	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	66.85	1.449	0.7723	0.635	0.0000	1.1962	1.0683	1.0844	0.0003
HPC	47.76	5.686	0.8241	8671.632	10.9658	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.968	0.8740	1.318	3.9678	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.192	0.8485	0.761	2.1925	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2579.35	5787.1

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2574	860.21
FanDuct	0.0000	0.5261	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.9012	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9031.8	2101.1	3613.2
LP_Shaft	2268.5	4485.3	1937.3

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	0.9268	747.77	22.54	10.194
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.2947	747.77	22.54	3.943
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	726.41	17.34	14.876
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	858.21	49.55	28.931
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	726.41	17.34	14.876
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	959.12	74.50	42.284
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	726.41	17.34	14.876

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1000	1.0000	1.0000	2.7983	533.05	-29.43	7.146
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	2.8756	959.12	74.50	41.310
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.5162	959.12	74.50	23.512
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	959.12	74.50	42.284
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	959.12	74.50	42.284
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	959.12	74.50	42.284
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	477.11	-16.48	5.368
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	477.11	-16.48	5.368
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	477.11	-16.48	5.368
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	477.11	-16.48	5.368

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1696.73	0.9995	0.0230	0.20325	0.01099

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.102	0.9801	1.0000	0.9800	613.40	0.377	536.3	423.2
Byp_Nozz	1.500	0.9800	1.0000	0.9800	2006.86	0.784	776.7	6053.1

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**********************************************************************************************************************************
Date:02/15/13    Time:13:37:27    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 16/ 30/ 1/14    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 474.92    Stator 1 exit: 480.59    Stator 2 inlet: 487.60    Stator 2 exit: 491.01
            Stator 3 inlet: 498.31    Stator 3 exit: 501.31    Stator 4 inlet: 508.15    Stator 4 exit: 510.62
            Stator 5 inlet: 516.13    Stator 5 exit: 518.21            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.08
Fan Bypass Relative Humidity       3.23
LPC Inlet Relative Humidity        2.94
LPC Exit Relative Humidity         0.50
HPC Relative Humidity              0.05
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          624.43    Fan/LPC Inlet Flow Velocity        174.79
Ambient Static Pressure          4.36    Fan/LPC Inlet Static Pressure        5.49
Ambient Static Temperature     438.58    Fan/LPC Inlet Static Temperature   468.53
Additional Water at LPC Exit   0.0045731
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.608	30029.0	27.00	301.85	742.1	1.0707	794.61	8.4735	624.43	8.166	0.828	10.000	1697.6	1604.2	1124.5

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	301.85	5.595	471.08	-18.23	0.0000	755.58	4.358	438.58	2595.4	0.6080	1.40073	0.0001104	301.82	0.033	0.0001
FS1	Inlet.Fl_O	301.85	5.595	471.08	-18.23	0.0000	755.58	5.199	461.29	4168.2	0.3255	1.40073	0.0001104	301.82	0.033	0.0001
FS12	Splitter.Fl_02	269.99	5.592	471.08	-18.23	0.0000	676.16	5.146	460.00	3531.8	0.3467	1.40073	0.0001104	269.96	0.030	0.0001
FS2	Splitter.Fl_01	31.86	5.592	471.08	-18.23	0.0000	79.80	5.487	468.53	830.5	0.1647	1.40073	0.0001104	31.86	0.004	0.0001
FS14	Fan.Fl_O	269.99	6.143	485.30	-14.82	0.0000	624.76	5.323	465.81	2606.7	0.4569	1.40061	0.0001104	269.96	0.030	0.0001
FS23	LPC.Fl_O	31.86	7.846	527.25	-4.76	0.0000	60.17	7.497	520.44	412.6	0.2557	1.40010	0.0001104	31.86	0.004	0.0001
FS24	VaporIN.Fl_O	32.01	7.846	533.51	-29.52	0.0000	60.81	7.488	526.46	412.6	0.2591	1.39938	0.0046835	31.86	0.149	0.0047
FS25	Bleed2.Fl_O	27.21	7.846	533.51	-29.52	0.0000	51.69	7.591	528.51	412.6	0.2177	1.39938	0.0046835	27.08	0.127	0.0047
FS3	HPC.Fl_O	25.89	45.691	956.02	73.52	0.0000	11.30	40.270	923.12	49.7	0.4309	1.38265	0.0046835	25.77	0.121	0.0047
FS36	Bleed3.Fl_O	20.06	45.691	956.02	73.52	0.0000	8.76	42.577	937.51	49.3	0.3210	1.38265	0.0046835	19.97	0.094	0.0047
FS4	Burner.Fl_O	20.28	44.639	1697.62	61.28	0.0111	12.08	42.145	1673.43	74.6	0.2948	1.33175	0.0046835	19.97	0.094	0.0180
FS45	HPT.Fl_O	27.11	11.173	1128.71	-38.44	0.0082	52.60	10.205	1101.58	265.4	0.3662	1.36616	0.0046835	26.76	0.125	0.0147
FS49	LPT.Fl_O	27.43	4.716	930.43	-86.93	0.0082	114.48	4.542	920.88	860.2	0.2339	1.37877	0.0046835	27.08	0.127	0.0146
FS5	TEGV.Fl_O	27.43	4.716	930.50	-86.93	0.0082	114.48	4.542	920.95	860.2	0.2339	1.37876	0.0046835	27.08	0.127	0.0146
FS8	Core_Nozz.Fl_O	27.43	4.716	930.57	-86.93	0.0082	114.49	4.358	910.61	613.4	0.3398	1.37876	0.0046835	27.08	0.127	0.0146
FS17	FanDuctLkg.Fl_O	269.99	6.143	485.30	-14.82	0.0000	624.76	5.323	465.81	2606.7	0.4569	1.40061	0.0001104	269.96	0.030	0.0001
FS171	Bleed15.Fl_O	274.79	6.143	486.14	-15.08	0.0000	636.42	5.176	462.88	2481.9	0.5008	1.40059	0.0001899	274.74	0.052	0.0002
FS172	FanDuct.Fl_O	274.79	6.143	486.14	-15.08	0.0000	636.42	5.176	462.88	2481.9	0.5008	1.40059	0.0001899	274.74	0.052	0.0002
FS173	Byp_Nozz.Fl_O	274.79	6.143	486.14	-15.08	0.0000	636.42	4.358	440.67	2006.9	0.7175	1.40059	0.0001899	274.74	0.052	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	676.16	1.098	0.9024	2254.369	1.0302	0.9037	-1301.7	-9825.89	52.68
LPC	79.80	1.403	0.8525	2254.369	1.1192	0.8594	-607.2	5.95	2.64
HPC	51.69	5.824	0.8140	8882.085	1.7919	0.8528	-3870.2	62.23	58.62
HPT	12.08	3.995	0.8740	218.636	1.3526	0.8521	3870.2		
LPT	52.60	2.369	0.8338	63.949	1.2106	0.8163	1908.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	785.63	1.096	0.9042	2232.874	0.0417	0.8607	1.0235	0.9980	0.9905
LPC	60.49	1.384	0.7656	0.595	0.0000	1.3192	1.0505	1.1135	0.0003
HPC	47.01	5.596	0.8224	8645.295	10.9531	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.912	0.8740	1.314	3.9123	12.6299	0.9723	1.0000	0.0003
LPT	0.81	2.030	0.8400	0.719	2.0298	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2595.42	5858.2

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2339	860.21
FanDuct	0.0000	0.5008	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.4735	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9008.3	2256.5	3870.2
LP_Shaft	2148.5	4666.6	1908.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0012	746.41	22.00	11.173
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3183	746.41	22.00	4.716
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	725.24	16.85	16.172
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	855.94	48.79	31.310
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	725.24	16.85	16.172
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	956.02	73.52	45.691
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	725.24	16.85	16.172

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1500	1.0000	1.0000	4.8013	533.51	-29.52	7.846
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.1065	956.02	73.52	44.639
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.7183	956.02	73.52	25.496
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	956.02	73.52	45.691
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	956.02	73.52	45.691
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	956.02	73.52	45.691
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	485.30	-14.82	6.143
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	485.30	-14.82	6.143
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	485.30	-14.82	6.143
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	485.30	-14.82	6.143

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1697.56	0.9995	0.0230	0.22072	0.01105

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.082	0.9801	1.0000	0.9800	613.40	0.340	489.8	417.6
Byp_Nozz	1.409	0.9800	1.0000	0.9800	2006.86	0.718	723.9	6182.8

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**********************************************************************************************************************************
Date:02/15/13    Time:13:37:53    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 28/ 42/ 1/26    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 482.83    Stator 1 exit: 487.00    Stator 2 inlet: 491.75    Stator 2 exit: 493.63
            Stator 3 inlet: 498.89    Stator 3 exit: 500.36    Stator 4 inlet: 505.39    Stator 4 exit: 506.46
            Stator 5 inlet: 510.15    Stator 5 exit: 510.93            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.92
Fan Bypass Relative Humidity       4.06
LPC Inlet Relative Humidity        3.92
LPC Exit Relative Humidity         1.25
HPC Relative Humidity              0.06
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          576.87    Fan/LPC Inlet Flow Velocity        193.94
Ambient Static Pressure          5.30    Fan/LPC Inlet Static Pressure        6.37
Ambient Static Temperature     454.14    Fan/LPC Inlet Static Temperature   478.74
Additional Water at LPC Exit   0.0041775
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.552	25666.0	27.00	326.67	752.5	1.1211	843.62	7.1384	576.87	7.285	0.858	10.000	1703.7	1608.2	1132.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	326.67	6.516	481.87	-16.15	0.0000	710.13	5.297	454.14	2590.6	0.5520	1.40063	0.0001988	326.61	0.065	0.0002
FS1	Inlet.Fl_O	326.67	6.516	481.87	-16.15	0.0000	710.13	6.113	473.14	4168.2	0.3034	1.40063	0.0001988	326.61	0.065	0.0002
FS12	Splitter.Fl_02	286.53	6.513	481.87	-16.15	0.0000	623.18	6.078	472.44	3531.8	0.3157	1.40063	0.0001988	286.47	0.057	0.0002
FS2	Splitter.Fl_01	40.14	6.513	481.87	-16.15	0.0000	87.30	6.366	478.74	830.5	0.1808	1.40063	0.0001988	40.13	0.008	0.0002
FS14	Fan.Fl_O	286.53	7.056	494.23	-13.19	0.0000	582.56	6.257	477.54	2606.7	0.4177	1.40050	0.0001988	286.47	0.057	0.0002
FS23	LPC.Fl_O	40.14	8.233	522.29	-6.46	0.0000	71.90	7.698	512.35	412.6	0.3113	1.40016	0.0001988	40.13	0.008	0.0002
FS24	VaporIN.Fl_O	40.31	8.233	528.05	-29.08	0.0000	72.60	7.685	517.77	412.6	0.3152	1.39950	0.0043763	40.13	0.176	0.0044
FS25	Bleed2.Fl_O	28.22	8.233	528.05	-29.08	0.0000	50.82	7.975	523.27	412.6	0.2138	1.39950	0.0043763	28.09	0.123	0.0044
FS3	HPC.Fl_O	26.85	47.467	944.18	72.31	0.0000	11.21	41.942	912.29	49.7	0.4264	1.38340	0.0043763	26.73	0.117	0.0044
FS36	Bleed3.Fl_O	20.81	47.467	944.18	72.31	0.0000	8.69	44.288	926.20	49.3	0.3180	1.38340	0.0043763	20.72	0.091	0.0044
FS4	Burner.Fl_O	21.04	46.374	1703.69	59.79	0.0113	12.08	43.782	1679.43	74.6	0.2949	1.33133	0.0043763	20.72	0.091	0.0180
FS45	HPT.Fl_O	28.12	11.974	1137.29	-38.19	0.0084	51.10	11.002	1111.75	265.4	0.3540	1.36552	0.0043763	27.76	0.122	0.0146
FS49	LPT.Fl_O	28.45	5.623	961.64	-81.02	0.0083	101.24	5.463	954.06	860.2	0.2054	1.37680	0.0043763	28.09	0.123	0.0145
FS5	TEGV.Fl_O	28.45	5.623	961.71	-81.02	0.0083	101.24	5.463	954.13	860.2	0.2054	1.37680	0.0043763	28.09	0.123	0.0145
FS8	Core_Nozz.Fl_O	28.45	5.623	961.78	-81.02	0.0083	101.24	5.297	946.16	613.4	0.2959	1.37679	0.0043763	28.09	0.123	0.0145
FS17	FanDuctLkg.Fl_O	286.53	7.056	494.23	-13.19	0.0000	582.56	6.257	477.54	2606.7	0.4177	1.40050	0.0001988	286.47	0.057	0.0002
FS171	Bleed15.Fl_O	298.62	7.056	495.60	-13.83	0.0000	607.99	6.063	474.57	2481.9	0.4704	1.40046	0.0003673	298.51	0.110	0.0004
FS172	FanDuct.Fl_O	298.62	7.056	495.60	-13.83	0.0000	607.99	6.063	474.57	2481.9	0.4704	1.40046	0.0003673	298.51	0.110	0.0004
FS173	Byp_Nozz.Fl_O	298.62	7.056	495.60	-13.83	0.0000	607.99	5.297	456.58	2006.9	0.6532	1.40046	0.0003673	298.51	0.110	0.0004

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	623.18	1.083	0.9031	2043.757	1.0256	0.9042	-1201.1	-2757.63	49.89
LPC	87.30	1.264	0.8262	2043.757	1.0839	0.8319	-550.5	6.38	2.41
HPC	50.82	5.766	0.8128	8854.683	1.7881	0.8517	-3949.4	61.50	57.82
HPT	12.08	3.873	0.8750	216.456	1.3437	0.8539	3949.4		
LPT	51.10	2.129	0.8238	58.413	1.1798	0.8079	1751.6		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	724.08	1.081	0.9049	2024.270	0.0425	0.8607	1.0235	0.9980	0.9905
LPC	53.44	1.311	0.7607	0.540	0.0000	1.6336	0.8496	1.0861	0.0003
HPC	46.22	5.541	0.8212	8618.623	11.0087	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.793	0.8750	1.301	3.7932	12.6299	0.9723	1.0000	0.0003
LPT	0.78	1.849	0.8299	0.657	1.8494	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2590.55	5857.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2054	860.21
FanDuct	0.0000	0.4704	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.1384	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8934.4	2321.7	3949.4
LP_Shaft	1969.9	4670.1	1751.6

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0383	737.68	21.62	11.974
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3301	737.68	21.62	5.623
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	716.82	16.55	16.864
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	845.56	47.98	32.558
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	716.82	16.55	16.864
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	944.18	72.31	47.467
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	716.82	16.55	16.864

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.3000	1.0000	1.0000	12.0922	528.05	-29.08	8.233
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.2216	944.18	72.31	46.374
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.8190	944.18	72.31	26.697
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	944.18	72.31	47.467
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	944.18	72.31	47.467
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	944.18	72.31	47.467
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	494.23	-13.19	7.056
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	494.23	-13.19	7.056
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	494.23	-13.19	7.056
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	494.23	-13.19	7.056

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1703.62	0.9995	0.0230	0.23434	0.01131

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.062	0.9801	1.0000	0.9800	613.40	0.296	434.3	384.0
Byp_Nozz	1.332	0.9800	1.0000	0.9800	2006.86	0.653	670.8	6225.6

```
**********************************************************************************************************************************
Date:02/15/13    Time:13:38:36    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 44/ 72/ 2/41    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 495.88    Stator 1 exit: 498.89    Stator 2 inlet: 501.74    Stator 2 exit: 502.57
            Stator 3 inlet: 506.00    Stator 3 exit: 506.40    Stator 4 inlet: 509.72    Stator 4 exit: 509.81
            Stator 5 inlet: 511.74    Stator 5 exit: 511.63            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.94
Fan Bypass Relative Humidity       5.03
LPC Inlet Relative Humidity        5.11
LPC Exit Relative Humidity         2.67
HPC Relative Humidity              0.07
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          523.25    Fan/LPC Inlet Flow Velocity        202.82
Ambient Static Pressure          6.74    Fan/LPC Inlet Static Pressure        7.75
Ambient Static Temperature     474.18    Fan/LPC Inlet Static Temperature   493.56
Additional Water at LPC Exit   0.0042566
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.490	20047.0	27.00	363.30	824.5	1.1323	933.61	6.3306	523.25	6.381	0.889	10.000	1733.0	1633.7	1161.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	363.30	7.943	496.98	-13.65	0.0000	657.95	6.740	474.18	2606.6	0.4900	1.40045	0.0003932	363.16	0.143	0.0004
FS1	Inlet.Fl_O	363.30	7.943	496.98	-13.65	0.0000	657.95	7.526	489.37	4168.2	0.2788	1.40045	0.0003932	363.16	0.143	0.0004
FS12	Splitter.Fl_02	313.74	7.939	496.98	-13.65	0.0000	568.48	7.504	489.04	3531.8	0.2849	1.40045	0.0003932	313.62	0.123	0.0004
FS2	Splitter.Fl_01	49.56	7.939	496.98	-13.65	0.0000	89.80	7.749	493.56	830.5	0.1862	1.40045	0.0003932	49.54	0.019	0.0004
FS14	Fan.Fl_O	313.74	8.505	507.90	-11.03	0.0000	536.46	7.707	493.80	2606.7	0.3776	1.40032	0.0003932	313.62	0.123	0.0004
FS23	LPC.Fl_O	49.56	9.109	525.34	-6.85	0.0000	80.47	8.352	512.46	412.6	0.3543	1.40009	0.0003932	49.54	0.019	0.0004
FS24	VaporIN.Fl_O	49.77	9.109	531.18	-29.89	0.0000	81.26	8.333	517.84	412.6	0.3590	1.39942	0.0046499	49.54	0.230	0.0046
FS25	Bleed2.Fl_O	29.86	9.109	531.18	-29.89	0.0000	48.75	8.847	526.77	412.6	0.2046	1.39942	0.0046499	29.72	0.138	0.0046
FS3	HPC.Fl_O	28.41	50.687	941.26	70.05	0.0000	11.10	44.927	910.25	49.7	0.4208	1.38352	0.0046499	28.28	0.132	0.0046
FS36	Bleed3.Fl_O	22.02	50.687	941.26	70.05	0.0000	8.60	47.368	923.74	49.3	0.3142	1.38352	0.0046499	21.92	0.102	0.0046
FS4	Burner.Fl_O	22.28	49.519	1733.03	56.99	0.0118	12.09	46.750	1708.43	74.6	0.2952	1.32957	0.0046499	21.92	0.102	0.0189
FS45	HPT.Fl_O	29.77	13.456	1166.48	-39.38	0.0088	48.76	12.470	1143.02	265.4	0.3356	1.36334	0.0046499	29.38	0.137	0.0153
FS49	LPT.Fl_O	30.12	7.042	1011.30	-77.14	0.0087	87.77	6.892	1005.41	860.2	0.1772	1.37341	0.0046499	29.72	0.138	0.0152
FS5	TEGV.Fl_O	30.12	7.042	1011.37	-77.14	0.0087	87.78	6.892	1005.48	860.2	0.1772	1.37341	0.0046499	29.72	0.138	0.0152
FS8	Core_Nozz.Fl_O	30.12	7.042	1011.44	-77.14	0.0087	87.78	6.740	999.45	613.3	0.2534	1.37340	0.0046499	29.72	0.138	0.0152
FS17	FanDuctLkg.Fl_O	313.74	8.505	507.90	-11.03	0.0000	536.46	7.707	493.80	2606.7	0.3776	1.40032	0.0003932	313.62	0.123	0.0004
FS171	Bleed15.Fl_O	333.65	8.505	509.29	-12.16	0.0000	571.28	7.473	490.81	2481.9	0.4337	1.40027	0.0006462	333.43	0.215	0.0006
FS172	FanDuct.Fl_O	333.65	8.505	509.29	-12.16	0.0000	571.28	7.473	490.81	2481.9	0.4337	1.40027	0.0006462	333.43	0.215	0.0006
FS173	Byp_Nozz.Fl_O	333.65	8.505	509.29	-12.16	0.0000	571.28	6.740	476.52	2006.9	0.5860	1.40027	0.0006462	333.43	0.215	0.0006

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	568.48	1.071	0.9050	1841.626	1.0220	0.9060	-1162.0	-1871.34	46.45
LPC	89.80	1.147	0.7025	1841.626	1.0571	0.7082	-476.9	7.00	2.16
HPC	48.75	5.564	0.8084	8787.337	1.7720	0.8475	-4120.0	61.53	57.60
HPT	12.09	3.680	0.8770	213.613	1.3284	0.8570	4120.0		
LPT	48.76	1.911	0.8164	52.782	1.1501	0.8024	1639.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	660.52	1.070	0.9069	1824.067	0.0438	0.8607	1.0235	0.9980	0.9905
LPC	46.82	1.245	0.7556	0.486	0.0000	1.9180	0.6009	0.9297	0.0003
HPC	44.34	5.349	0.8168	8553.073	11.0361	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.606	0.8770	1.284	3.6058	12.6299	0.9723	1.0000	0.0003
LPT	0.75	1.685	0.8225	0.594	1.6850	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2606.60	5908.4

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1772	860.21
FanDuct	0.0000	0.4337	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.3306	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8892.7	2433.3	4120.0
LP_Shaft	1802.7	4775.1	1639.0

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0989	737.74	20.08	13.456
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3494	737.74	20.08	7.042
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	717.19	15.08	18.256
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	844.06	46.06	34.887
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	717.19	15.08	18.256
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	941.26	70.05	50.687
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	717.19	15.08	18.256

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	19.9082	531.18	-29.89	9.109
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.4097	941.26	70.05	49.519
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.9835	941.26	70.05	28.891
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	941.26	70.05	50.687
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	941.26	70.05	50.687
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	941.26	70.05	50.687
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	507.90	-11.03	8.505
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	507.90	-11.03	8.505
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	507.90	-11.03	8.505
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	507.90	-11.03	8.505

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1732.98	0.9995	0.0230	0.25934	0.01183

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.045	0.9801	1.0000	0.9800	613.40	0.253	381.8	357.5
Byp_Nozz	1.262	0.9800	1.0000	0.9800	2006.86	0.586	614.8	6375.5

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**********************************************************************************************************************************
Date:02/15/13    Time:13:39:21    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 41/ 83/ 3/37    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 509.81    Stator 1 exit: 512.17    Stator 2 inlet: 514.54    Stator 2 exit: 515.29
            Stator 3 inlet: 518.02    Stator 3 exit: 518.45    Stator 4 inlet: 521.06    Stator 4 exit: 521.25
            Stator 5 inlet: 522.88    Stator 5 exit: 522.92            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         6.60
Fan Bypass Relative Humidity       6.08
LPC Inlet Relative Humidity        5.78
LPC Exit Relative Humidity         3.48
HPC Relative Humidity              0.10
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          484.46    Fan/LPC Inlet Flow Velocity        170.52
Ambient Static Pressure          8.15    Fan/LPC Inlet Static Pressure        9.18
Ambient Static Temperature     490.63    Fan/LPC Inlet Static Temperature   507.74
Additional Water at LPC Exit   0.0041237
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.446	15435.0	27.00	380.62	615.9	1.4205	874.87	6.9316	484.46	5.173	0.900	10.000	1678.4	1581.4	1149.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	380.62	9.342	510.16	-11.98	0.0000	593.82	8.149	490.63	2524.5	0.4460	1.40025	0.0006510	380.37	0.248	0.0007
FS1	Inlet.Fl_O	380.62	9.342	510.16	-11.98	0.0000	593.82	8.946	503.89	4168.2	0.2494	1.40025	0.0006510	380.37	0.248	0.0007
FS12	Splitter.Fl_02	332.63	9.337	510.16	-11.98	0.0000	519.22	8.915	503.46	3531.8	0.2580	1.40025	0.0006510	332.41	0.216	0.0007
FS2	Splitter.Fl_01	47.99	9.337	510.16	-11.98	0.0000	74.91	9.183	507.74	830.5	0.1543	1.40025	0.0006510	47.96	0.031	0.0007
FS14	Fan.Fl_O	332.63	9.798	518.06	-10.08	0.0000	498.62	9.017	505.91	2606.7	0.3464	1.40015	0.0006510	332.41	0.216	0.0007
FS23	LPC.Fl_O	47.99	10.453	532.69	-6.57	0.0000	68.37	9.843	523.62	412.6	0.2943	1.39995	0.0006510	47.96	0.031	0.0007
FS24	VaporIN.Fl_O	48.19	10.453	538.30	-28.89	0.0000	69.01	9.829	528.93	412.6	0.2978	1.39930	0.0047747	47.96	0.229	0.0048
FS25	Bleed2.Fl_O	28.91	10.453	538.30	-28.89	0.0000	41.41	10.238	535.11	412.6	0.1726	1.39930	0.0047747	28.77	0.137	0.0048
FS3	HPC.Fl_O	27.51	48.322	906.32	60.70	0.0000	11.06	42.876	876.62	49.7	0.4187	1.38553	0.0047747	27.38	0.131	0.0048
FS36	Bleed3.Fl_O	21.32	48.322	906.32	60.70	0.0000	8.57	45.182	889.52	49.3	0.3128	1.38553	0.0047747	21.22	0.101	0.0048
FS4	Burner.Fl_O	21.56	47.209	1678.36	48.15	0.0115	12.07	44.575	1654.46	74.6	0.2945	1.33238	0.0047747	21.22	0.101	0.0186
FS45	HPT.Fl_O	28.82	14.109	1153.86	-38.04	0.0085	44.77	13.250	1134.66	265.4	0.3045	1.36432	0.0047747	28.44	0.136	0.0151
FS49	LPT.Fl_O	29.15	8.387	1029.77	-67.94	0.0084	71.98	8.268	1025.78	860.2	0.1445	1.37240	0.0047747	28.77	0.137	0.0150
FS5	TEGV.Fl_O	29.15	8.387	1029.84	-67.94	0.0084	71.98	8.268	1025.85	860.2	0.1445	1.37240	0.0047747	28.77	0.137	0.0150
FS8	Core_Nozz.Fl_O	29.15	8.387	1029.91	-67.94	0.0084	71.99	8.149	1021.89	613.4	0.2052	1.37239	0.0047747	28.77	0.137	0.0150
FS17	FanDuctLkg.Fl_O	332.63	9.798	518.06	-10.08	0.0000	498.62	9.017	505.91	2606.7	0.3464	1.40015	0.0006510	332.41	0.216	0.0007
FS171	Bleed15.Fl_O	351.90	9.798	519.17	-11.11	0.0000	528.08	8.807	503.59	2481.9	0.3933	1.40011	0.0008760	351.59	0.308	0.0009
FS172	FanDuct.Fl_O	351.90	9.798	519.17	-11.11	0.0000	528.08	8.807	503.59	2481.9	0.3933	1.40011	0.0008760	351.59	0.308	0.0009
FS173	Byp_Nozz.Fl_O	351.90	9.798	519.17	-11.11	0.0000	528.08	8.149	492.54	2006.9	0.5198	1.40011	0.0008760	351.59	0.308	0.0009

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	519.22	1.049	0.8951	1596.527	1.0155	0.8958	-891.9	-1535.28	44.76
LPC	74.91	1.119	0.7424	1596.527	1.0442	0.7465	-367.1	8.35	1.96
HPC	41.41	4.623	0.7925	8510.501	1.6837	0.8310	-3575.5	69.67	64.23
HPT	12.07	3.346	0.8678	211.630	1.2990	0.8482	3575.5		
LPT	44.77	1.682	0.8019	46.613	1.1169	0.7900	1259.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	603.28	1.048	0.8969	1581.304	0.0441	0.8607	1.0235	0.9980	0.9905
LPC	39.28	1.181	0.7476	0.422	0.0000	1.9071	0.6613	0.9931	0.0003
HPC	37.66	4.452	0.8007	8283.616	10.6983	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.281	0.8677	1.272	3.2811	12.6299	0.9723	1.0000	0.0003
LPT	0.69	1.513	0.8079	0.524	1.5131	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2524.52	5731.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1445	860.21
FanDuct	0.0000	0.3933	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.9316	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8670.0	2166.0	3575.5
LP_Shaft	1583.4	4176.1	1259.0

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0639	723.48	15.91	14.109
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3383	723.48	15.91	8.387
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	705.05	11.43	18.784
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	818.93	39.20	33.932
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	705.05	11.43	18.784
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	906.32	60.70	48.322
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	705.05	11.43	18.784

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.4000	1.0000	1.0000	19.2741	538.30	-28.89	10.453
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.3011	906.32	60.70	47.209
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.8885	906.32	60.70	28.276
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	906.32	60.70	48.322
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	906.32	60.70	48.322
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	906.32	60.70	48.322
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	518.06	-10.08	9.798
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	518.06	-10.08	9.798
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	518.06	-10.08	9.798
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	518.06	-10.08	9.798

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1678.29	0.9995	0.0230	0.24302	0.01145

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.029	0.9801	1.0000	0.9800	613.40	0.205	312.5	283.1
Byp_Nozz	1.202	0.9800	1.0000	0.9800	2006.86	0.520	554.4	6063.8

Compressor Code Analysis: 10µm, 9 g/m^3, ISA +27R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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              Fan Core + 4 Stage LPC 10% 39000 ft 02-15-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.503   EfDer =  0.954    SH =  0.100590E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     26.291    2447.949       4.265     467.792       1.000       1.000       0.980
 W Kg/sec =  11.950  Wdry =  26.264  WH2O = 0.026  lbm/sec   H2O =   0.391g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     86.065    2577.601       1.380       0.249      53.381      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  65178.254   20620.678       3.299     831.557     252.057     619.754       2.459

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   188.11    -0.06   188.11     0.18     0.46   464.03
 MEAN    17.06     0.00    -0.02   188.11    -0.06   188.11     0.18     0.39
 HUB     12.51     0.00    -0.02   188.11    -0.06   188.11     0.18     0.31

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.89    50.47    16.42   440.71   479.23     4.17   464.95   457.96    24.04
 MEAN    62.70    47.20    15.50   364.45   410.19     4.17   464.95   457.96    24.04
 HUB     54.86    38.62    16.24   267.24   326.86     4.17   464.95   457.96    24.04

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   394.89   304.30   251.67  1063.17     0.37     7.29     6.52    16.04
 MEAN    18.04   399.49   307.51   255.02  1060.04     0.38     7.43     6.80    12.53
 HUB     15.00   432.53   345.93   259.64  1056.20     0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    440.71   286.26   136.41     0.27  6279.02     0.92     0.87
 MEAN   385.29   266.61    77.78     0.25  5547.34     0.92     0.87     0.87     1.77
 HUB    320.44   260.89    25.50     0.25  5189.82     0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.92     1.15     4.48   489.31     1.05   476.80   473.45    22.20
 MEAN     4.84     1.13     4.39   486.80     1.04   474.00   472.21    24.60
 HUB      4.80     1.13     4.28   485.58     1.04   470.57   472.03    27.91

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.41    28.46    24.20     4.26     0.93     0.58     1.80
 MEAN    50.33    16.96    12.70     4.26     0.95     0.52     2.22
 HUB     53.11    -5.61    -9.30     3.69     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.954       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   411.1464   306.9116   273.5811  1059.6078     0.3880    -0.0358     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.8488     4.3768   473.6880   472.7832    25.8036    48.2862    35.4000   -12.8862

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   271.4115    66.3955   263.1651  1068.0946     0.2541     0.5164     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.8367     4.6271   481.3259   471.5856   554.9116     0.0360     0.6094

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   270.3220     0.0000   270.3220  1068.1079     0.2531     0.4860     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.6062	481.3726	472.2845	0.0000	0.0600	0.0865	0.4718

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8142	4.8130	1.1286	487.2221	19.4362	167.6450	1.2996

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
121344.914	0.625	180.282	271298.250	0.186233E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =15.069 EfDer = 0.958 SH = 0.275292E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.291	2447.949	4.813	487.220	1.000	1.000	0.980

W Kg/sec = 11.950 Wdry = 26.218 WH2O = 0.072 lbm/sec H2O = 1.145g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
77.822	2525.789	1.378	0.250	53.438	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60856.727	20606.469	2.588	590.487	228.165	468.502	2.053

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	247.33	-0.09	247.33	0.23	0.47	452.94
MEAN	18.08	0.00	-0.02	247.33	-0.09	247.33	0.23	0.43	
HUB	15.21	0.00	-0.02	247.33	-0.09	247.33	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.61	46.36	14.25	439.00	503.95	4.64	482.34	474.57	34.09
MEAN	57.37	42.30	15.07	386.19	458.68	4.64	482.34	474.57	34.09
HUB	52.73	37.84	14.89	324.92	408.42	4.64	482.34	474.57	34.09

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	363.22	253.32	260.30	1082.20	0.34	2.33	2.04	9.02
MEAN	18.01	362.71	249.82	262.96	1079.72	0.34	2.40	2.13	7.35
HUB	15.22	384.29	277.43	265.91	1077.27	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	436.22	318.13	182.90	0.29	5174.53	0.92	0.88		
MEAN	384.74	295.55	134.91	0.27	4500.82	0.92	0.88	0.88	1.71
HUB	325.20	270.17	47.77	0.25	4224.61	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.39	1.12	4.99	504.85	1.04	494.33	484.85	23.76
MEAN	5.32	1.10	4.92	502.56	1.03	492.06	483.82	25.64
HUB	5.28	1.10	4.84	501.62	1.03	489.84	483.74	27.62

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	44.22	35.09	31.50	3.59	0.93	0.55	1.40
MEAN	43.53	27.16	23.50	3.66	0.95	0.52	1.63
HUB	46.21	10.18	6.50	3.68	0.95	0.51	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.958	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	387.8056	250.5231	296.0260	1078.5219	0.3596	-0.1066	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3264	4.8778	491.0188	484.4916	26.7768	40.2408	30.6000	-9.6408

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	286.2831	60.6940	279.7753	1084.4886	0.2640	0.3703	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.3200	5.0722	496.4742	483.1998	491.5697	0.0256	0.4665

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	296.7679	0.0000	296.7679	1083.9364	0.2738	0.3577	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0383	495.9862	483.6133	0.0000	0.0600	0.0664	0.2876

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8314	5.3033	1.1019	503.0056	15.7900	188.6419	1.4623

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
99040.055	0.520	147.144	246522.469	0.312907E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =13.088 EfDer = 0.973 SH = 0.365048E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.291	2447.949	5.303	503.004	1.000	1.000	0.980

W Kg/sec = 11.950 Wdry = 26.195 WH2O = 0.096 lbm/sec H2O = 1.620g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
71.762	2485.845	1.377	0.251	53.467	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
57047.387	20599.141	2.591	545.479	210.525	424.468	2.016

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	250.99	-0.09	250.99	0.23	0.46	435.37
MEAN	17.74	0.00	-0.02	250.99	-0.09	250.99	0.23	0.42	
HUB	15.05	0.00	-0.02	250.99	-0.09	250.99	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.66	46.36	13.30	428.74	496.88	5.11	497.99	484.33	26.36
MEAN	56.49	43.40	13.09	378.94	454.59	5.11	497.99	484.33	26.36
HUB	52.03	38.84	13.19	321.50	407.94	5.11	497.99	484.33	26.36

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	354.96	237.18	264.09	1097.90	0.32	2.26	1.98	8.75
MEAN	17.51	356.47	236.82	266.43	1095.78	0.33	2.34	2.07	6.78
HUB	14.85	380.03	268.42	269.02	1093.70	0.35	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	423.19	323.02	186.01	0.29	4700.19	0.92	0.89		
MEAN	373.98	299.67	137.16	0.27	4147.45	0.92	0.89	0.89	1.66
HUB	317.23	273.42	48.81	0.25	3987.34	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.87	1.11	5.47	518.98	1.03	508.95	493.00	19.65
MEAN	5.80	1.09	5.40	517.10	1.03	506.99	492.26	20.88
HUB	5.78	1.09	5.33	516.55	1.03	505.07	492.41	22.16

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.93	35.16	31.50	3.66	0.93	0.52	1.40
MEAN	41.63	27.24	23.50	3.74	0.94	0.50	1.62
HUB	44.94	10.28	6.50	3.78	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.973	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	382.7458	238.3749	299.4525	1094.5544	0.3497	-0.1145	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.8151	5.3509	505.8977	492.9403	21.7959	38.5210	31.5000	-7.0210

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	294.5491	64.2539	287.4554	1099.6708	0.2679	0.3199	2.3726

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8110     5.5328   510.6455   491.8001   451.3937     0.0198     0.4414

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   299.5588     0.0000   299.5588  1099.3993     0.2725     0.3433     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.5102   510.4089   492.1696     0.0000     0.0600     0.0530     0.2663

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8523     5.7970     1.0931   517.5391    14.5378   193.8804     1.5029

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  91462.000       0.511     135.885  245062.141   0.413694E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =11.507   EfDer =  0.983    SH =  0.479069E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.291    2447.949       5.797    517.538       1.000       1.000       0.980
 W Kg/sec =  11.950  Wdry =  26.165  WH2O = 0.126  lbm/sec   H2O =   2.259g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     66.592    2450.693       1.375       0.252      53.504      77.000       0.050

   CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  53694.613   20589.797       2.626     513.330     195.496     395.845       2.025

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   251.03    -0.09   251.03     0.23     0.44   411.89
 MEAN    16.97     0.00    -0.02   251.03    -0.09   251.03     0.23     0.40
 HUB     14.32     0.00    -0.02   251.03    -0.09   251.03     0.23     0.36

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.62    46.36    12.26   411.44   482.05     5.59   512.54   492.91    21.78
 MEAN    55.31    43.80    11.51   362.53   441.03     5.59   512.54   492.91    21.78
 HUB     50.64    37.84    12.80   305.91   395.79     5.59   512.54   492.91    21.78

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   341.57   217.53   263.35  1111.89      0.31     2.16     1.89     8.34
 MEAN    16.57   343.04   217.26   265.47  1109.98      0.31     2.24     1.97     6.35
 HUB     13.89   365.13   248.22   267.78  1108.10      0.33     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    403.32   322.29   185.80     0.29  4108.54     0.92     0.90
 MEAN   354.06   298.64   136.79     0.27  3602.39     0.92     0.90      0.90     1.62
 HUB    296.72   272.13    48.50     0.25  3449.08     0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.33     1.09     5.93   531.45     1.03   522.20   500.06    17.23
 MEAN     6.26     1.08     5.87   529.74     1.02   520.41   499.43    18.15
 HUB      6.24     1.08     5.80   529.22     1.02   518.65   499.58    19.09

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.56    35.20    31.50     3.70     0.93     0.49     1.40
 MEAN    39.30    27.26    23.50     3.76     0.94     0.47     1.62
 HUB     42.83    10.27     6.50     3.77     0.94     0.47     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.983       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   364.0066   218.4865   291.1433  1109.1086     0.3282    -0.0907     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.2719     5.8286   519.6387   499.9900    18.7100    36.8861    32.4000    -4.4861
```

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	292.2521	65.5436	284.8075	1113.0703	0.2626	0.2828	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.2698	5.9812	523.3663	499.0750	432.2457	0.0153	0.4199

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	289.9400	0.0000	289.9400	1113.1586	0.2605	0.3298	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.9748	523.4641	499.2832	0.0000	0.0600	0.0434	0.2672

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8671	6.2582	1.0796	530.1193	12.5959	208.8784	1.6192

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
79534.383	0.489	118.164	250851.000	0.531763E-02

Melt Ratio at Stator LE, Throat, TE
0.86873E-02 0.17002E-01 0.47324E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =10.057 EfDer = 0.991 SH = 0.588409E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.291	2447.949	6.258	530.113	1.000	1.000	0.980

W Kg/sec = 11.950 Wdry = 26.136 WH2O = 0.155 lbm/sec H2O = 2.931g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.430	2421.440	1.374	0.253	53.539	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50831.969	20580.811	2.779	509.668	183.403	384.739	2.098

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	239.35	-0.08	239.35	0.21	0.41	387.11
MEAN	15.91	0.00	-0.02	239.35	-0.08	239.35	0.21	0.37	
HUB	13.07	0.00	-0.02	239.35	-0.08	239.35	0.21	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.56	47.36	11.20	391.36	458.82	6.06	525.59	499.68	18.20
MEAN	54.86	44.80	10.06	339.94	415.82	6.06	525.59	499.68	18.20
HUB	49.40	38.84	10.56	279.21	367.82	6.06	525.59	499.68	18.20

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	324.29	204.48	251.70	1124.38	0.29	2.05	1.78	7.43
MEAN	15.50	322.85	199.59	253.76	1122.41	0.29	2.13	1.86	5.75
HUB	12.59	339.17	222.54	255.96	1120.47	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	383.24	308.72	178.76	0.27	3669.89	0.92	0.91		
MEAN	331.07	285.80	131.48	0.25	3094.42	0.92	0.91	0.91	1.61
HUB	268.95	260.14	46.42	0.23	2802.81	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.76	1.08	6.39	542.49	1.02	534.18	505.60	14.72
MEAN	6.68	1.07	6.31	540.54	1.02	532.31	504.88	15.49
HUB	6.64	1.06	6.24	539.56	1.02	530.47	504.76	16.29

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	39.09	35.38	31.50	3.88	0.93	0.48	1.40
MEAN	38.19	27.39	23.50	3.89	0.94	0.46	1.64
HUB	41.00	10.28	6.50	3.78	0.94	0.44	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.991	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	353.1478	203.2463	288.7981	1121.0018	0.3150	-0.1699	2.0437

```
    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6842     6.2477   531.0103   505.4684    16.1117    35.1366    33.0000    -2.1366

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   295.0387    67.3723   287.2434  1124.1212     0.2625     0.1651     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6820     6.3744   533.9752   504.7008   410.5396     0.0258     0.3956

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   286.9675     0.0000   286.9675  1124.4703     0.2552     0.3190     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3869   534.3170   504.7263     0.0000     0.0600     0.0382     0.1980

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8807     6.6773     1.0670   540.8173    10.7515   228.3323     1.7700

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  68097.234       0.464     101.172  263157.531   0.621333E-02

Melt Ratio at Stator LE, Throat, TE
0.18357E+00 0.20762E+00 0.27941E+00
 trTOT =     1.1561   Tt4 =   540.8173   T1  =   467.7921

   OVERALL EXIT CONDITIONS; ALL          5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    459478.56    682.6473     86.0646      1.5658      0.8352     15.5029      1.1561     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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              Fan Core + 4 Stage LPC 10% 38334 ft 02-15-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.578   EfDer =  0.954    SH =  0.880996E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.356    2370.637       4.199     461.486       1.000       1.000       0.980
 W Kg/sec =  11.526  Wdry =  25.334  WH2O = 0.022  lbm/sec   H2O =   0.342g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.726    2513.201       1.381       0.249      53.377      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  62918.086   19888.846       3.392     831.557     245.188     619.754       2.528

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   181.59    -0.06   181.59     0.17     0.44   452.44
 MEAN    17.06     0.00    -0.02   181.59    -0.06   181.59     0.17     0.38
 HUB     12.51     0.00    -0.02   181.59    -0.06   181.59     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.95    50.47    16.48   426.79   463.87     4.11   458.84   453.65    27.57
 MEAN    62.78    47.20    15.58   352.94   396.97     4.11   458.84   453.65    27.57
 HUB     54.95    38.62    16.33   258.80   316.21     4.11   458.84   453.65    27.57

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   382.40   294.83   243.53  1055.54     0.36     7.29     6.52    16.04
 MEAN    18.04   386.75   297.94   246.60  1052.59     0.37     7.43     6.80    12.53
 HUB     15.00   418.48   334.97   250.83  1048.97     0.40     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    426.79   276.99   131.96     0.26  6083.55     0.92     0.87
 MEAN   373.12   257.81    75.19     0.24  5374.70     0.92     0.87     0.87     1.77
 HUB    310.32   252.04    24.66     0.24  5025.40     0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.81     1.15     4.40   481.68     1.04   469.95   468.77    25.28
 MEAN     4.74     1.13     4.32   479.33     1.04   467.33   467.51    27.94
 HUB      4.70     1.12     4.22   478.17     1.04   464.12   467.28    31.57

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.44    28.45    24.20     4.25     0.93     0.58     1.80
 MEAN    50.39    16.96    12.70     4.26     0.95     0.52     2.22
 HUB     53.17    -5.61    -9.30     3.69     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.954       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   397.9713   297.3600   264.4962  1052.1929     0.3782    -0.0358     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.7447     4.3044   467.0322   468.0496    29.2371    48.3475    35.4000   -12.9475

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   262.9071    64.3151   254.9191  1060.1990     0.2480     0.5168     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.7337     4.5381   474.1854   466.9697   554.9116     0.0352     0.6093

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   261.8184     0.0000   261.8184  1060.2092     0.2469     0.4854     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.5181   474.2303   467.6013     0.0000     0.0600     0.0869     0.4712
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8136     4.7111     1.1219   479.7219    18.2419   167.3736     1.2975

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 113804.242       0.625     163.070  264121.094   0.158478E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.062   EfDer =  0.958    SH =  0.231529E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.356    2370.637       4.711     479.720       1.000       1.000       0.980
W Kg/sec =  11.526  Wdry =  25.297  WH2O = 0.059  lbm/sec   H2O =   0.959g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.087    2465.065       1.379       0.250      53.423      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 58950.059   19877.605       2.648     590.487     223.017     468.502       2.101

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
TIP     20.55     0.00    -0.02   239.59    -0.08   239.59     0.23     0.46   442.05
MEAN    18.08     0.00    -0.02   239.59    -0.08   239.59     0.23     0.42
HUB     15.21     0.00    -0.02   239.59    -0.08   239.59     0.23     0.37

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
TIP     60.60    46.36    14.24   425.13   488.07     4.55   475.13   469.65    38.29
MEAN    57.36    42.30    15.06   374.00   444.23     4.55   475.13   469.65    38.29
HUB     52.72    37.84    14.88   314.66   395.56     4.55   475.13   469.65    38.29

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
TIP     20.42   351.95   244.88   252.79  1073.53     0.33     2.33     2.04     9.02
MEAN    18.01   351.49   241.66   255.23  1071.19     0.33     2.40     2.13     7.35
HUB     15.22   372.40   268.59   257.95  1068.89     0.35     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
TIP    422.44   308.91   177.56     0.29  5002.19     0.92     0.88
MEAN   372.58   286.85   130.92     0.27  4353.86     0.92     0.88      0.88     1.71
HUB    314.93   262.08    46.34     0.25  4090.05     0.92     0.88

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
TIP      5.25     1.11     4.88   496.25     1.03   486.36   479.82    26.93
MEAN     5.18     1.10     4.81   494.11     1.03   484.24   478.78    29.00
HUB      5.15     1.09     4.74   493.24     1.03   482.16   478.67    31.18

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
TIP     44.09    35.08    31.50     3.58     0.93     0.55     1.40
MEAN    43.44    27.16    23.50     3.66     0.95     0.52     1.63
HUB     46.16    10.18     6.50     3.68     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.958       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   375.8116   242.3427   287.2358  1070.0554     0.3512    -0.1069     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.1886     4.7704   483.2553   479.4090    30.2637    40.1545    30.6000    -9.5545

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   278.1724    58.9745   271.8490  1075.6769     0.2586     0.3681     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.1829     4.9508   488.3530   478.2465   491.5697     0.0248     0.4642

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   288.2902     0.0000   288.2902  1075.1506     0.2681     0.3556     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9191	487.8947	478.6250	0.0000	0.0600	0.0659	0.2850

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8317	5.1672	1.0968	494.5289	14.8132	188.8337	1.4638

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
92774.047	0.520	132.936	240195.891	0.262328E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.995 EfDer = 0.974 SH = 0.305496E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.356	2370.637	5.167	494.528	1.000	1.000	0.980

W Kg/sec = 11.526 Wdry = 25.279 WH2O = 0.077 lbm/sec H2O = 1.346g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.434	2427.881	1.378	0.251	53.447	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55439.027	19871.787	2.641	545.479	206.552	424.468	2.055

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	243.91	-0.08	243.91	0.23	0.45	425.22
MEAN	17.74	0.00	-0.02	243.91	-0.08	243.91	0.23	0.41	
HUB	15.05	0.00	-0.02	243.91	-0.08	243.91	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.57	46.36	13.21	415.20	481.62	4.99	489.79	479.28	29.88
MEAN	56.40	43.40	13.00	366.97	440.71	4.99	489.79	479.28	29.88
HUB	51.93	38.84	13.09	311.35	395.58	4.99	489.79	479.28	29.88

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	344.19	228.69	257.23	1088.34	0.32	2.26	1.98	8.75
MEAN	17.51	345.79	228.67	259.39	1086.35	0.32	2.34	2.07	6.78
HUB	14.85	368.79	259.75	261.78	1084.40	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	409.82	314.60	181.13	0.29	4532.12	0.92	0.89		
MEAN	362.17	291.73	133.50	0.27	4004.67	0.92	0.89	0.89	1.66
HUB	307.21	266.05	47.46	0.25	3858.61	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.69	1.10	5.32	509.47	1.03	500.03	487.84	22.45
MEAN	5.63	1.09	5.25	507.73	1.03	498.20	487.10	23.82
HUB	5.61	1.09	5.19	507.25	1.03	496.41	487.23	25.24

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.64	35.15	31.50	3.65	0.93	0.52	1.40
MEAN	41.40	27.23	23.50	3.73	0.94	0.50	1.62
HUB	44.78	10.28	6.50	3.78	0.94	0.50	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.974	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	371.3841	230.1677	291.4601	1085.1791	0.3422	-0.1152	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6413	5.2087	497.1645	487.7422	24.8559	38.2983	31.5000	-6.7983

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	287.0473	62.6174	280.1342	1089.9875	0.2633	0.3148	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6377	5.3764	501.5866	486.7131	451.3937	0.0191	0.4370

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	291.8798	0.0000	291.8798	1089.7292	0.2678	0.3393	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3555	501.3635	487.0583	0.0000	0.0600	0.0520	0.2615

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8534	5.6248	1.0886	508.1464	13.6218	194.6367	1.5088

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
85531.344	0.509	122.558	239047.078	0.345940E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.334 EfDer = 0.984 SH = 0.400601E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.356	2370.637	5.625	508.145	1.000	1.000	0.980

W Kg/sec = 11.526 Wdry = 25.255 WH2O = 0.102 lbm/sec H2O = 1.869g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.589	2395.128	1.376	0.251	53.478	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52334.082	19864.289	2.667	513.330	192.458	395.845	2.057

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	244.67	-0.08	244.67	0.22	0.43	402.55
MEAN	16.97	0.00	-0.02	244.67	-0.08	244.67	0.22	0.39	
HUB	14.32	0.00	-0.02	244.67	-0.08	244.67	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.45	46.36	12.09	398.45	467.64	5.43	503.39	487.75	24.94
MEAN	55.13	43.80	11.33	351.09	428.00	5.43	503.39	487.75	24.94
HUB	50.45	37.84	12.61	296.25	384.29	5.43	503.39	487.75	24.94

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	331.53	209.19	257.20	1101.54	0.30	2.16	1.89	8.34
MEAN	16.57	333.15	209.36	259.15	1099.75	0.30	2.24	1.97	6.35
HUB	13.89	354.80	240.03	261.28	1098.00	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	390.58	314.73	181.40	0.29	3951.09	0.92	0.90		
MEAN	342.88	291.52	133.52	0.27	3471.34	0.92	0.90	0.90	1.61
HUB	287.35	265.53	47.33	0.24	3335.18	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.11	1.09	5.75	521.13	1.03	512.40	494.79	19.88
MEAN	6.05	1.08	5.68	519.56	1.02	510.74	494.17	20.91
HUB	6.04	1.07	5.62	519.11	1.02	509.11	494.32	21.96

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	39.12	35.19	31.50	3.69	0.93	0.49	1.40
MEAN	38.93	27.26	23.50	3.76	0.94	0.47	1.62
HUB	42.57	10.27	6.50	3.77	0.94	0.47	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.984	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	353.6627	210.5374	284.1677	1098.9152	0.3218	-0.0917	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.0629	5.6498	510.0009	494.7102	21.5673	36.5344	32.4000	-4.1344

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	285.5442	64.0392	278.2704	1102.6255	0.2590	0.2755	2.2705

```
   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.0612     5.7895   513.4579   493.8964   432.2457     0.0146     0.4137

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   283.2722     0.0000   283.2722  1102.7213     0.2569     0.3239     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.7836   513.5605   494.1676     0.0000     0.0600     0.0424     0.2602

    STAGE EXIT CONDITIONS, STAGE            4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8677     6.0505     1.0757   519.9293    11.7866   210.2968     1.6302

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  74237.703       0.487     106.375  244944.391   0.449708E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.808   EfDer =  0.992    SH =  0.515999E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.356    2370.637       6.051     519.928       1.000       1.000       0.980
 W Kg/sec =  11.526  Wdry =  25.225  WH2O = 0.131  lbm/sec   H2O =   2.536g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     61.677    2367.833       1.375       0.252      53.516      77.000       0.050

   CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  49682.199   19855.162       2.814     509.668     181.108     384.739       2.124

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   233.94    -0.08   233.94     0.21     0.40   378.54
 MEAN    15.91     0.00    -0.02   233.94    -0.08   233.94     0.21     0.37
 HUB     13.07     0.00    -0.02   233.94    -0.08   233.94     0.21     0.32

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.32    47.36    10.96   379.00   445.45     5.87   515.59   494.88    22.01
 MEAN    54.61    44.80     9.81   329.20   403.93     5.87   515.59   494.88    22.01
 HUB     49.14    38.84    10.30   270.39   357.60     5.87   515.59   494.88    22.01

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   314.96   196.13   246.44  1113.31      0.28     2.05     1.78     7.43
 MEAN    15.50   313.88   191.94   248.35  1111.47      0.28     2.13     1.86     5.75
 HUB     12.59   330.07   215.07   250.38  1109.66      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    371.14   302.26   175.01     0.27  3520.07     0.92     0.91
 MEAN   320.61   279.70   128.67     0.25  2975.96     0.92     0.91     0.91     1.60
 HUB    260.46   254.46    45.39     0.23  2708.75     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.51     1.08     6.16   531.45     1.02   523.60   500.85    18.19
 MEAN     6.44     1.06     6.10   529.67     1.02   521.87   500.16    19.12
 HUB      6.40     1.06     6.03   528.80     1.02   520.17   500.06    20.08

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.51    35.38    31.50     3.88     0.93     0.48     1.40
 MEAN    37.70    27.39    23.50     3.89     0.94     0.45     1.64
 HUB     40.66    10.28     6.50     3.78     0.94     0.44     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.992       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   343.6067   195.4643   282.5938  1110.1072     0.3095    -0.1718     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.4422     6.0352   520.6321   500.7744    19.9407    34.6708    33.0000    -1.6708
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth       Cuth      Cmth      Aoth        Machth    cp 2-Th    Stat Chord
15.2185   288.9437   65.9805  281.3095  1113.0089    0.2596    0.1555    2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh     w2-Th     DiffFact4
 0.9500     6.4404    6.1504   523.3645   500.0756   410.5396    0.0249    0.3878

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4          Mach4     cp 3-4   Stator Gap
14.7013   281.0797    0.0000   281.0797  1113.3610     0.2525    0.3110    0.5109

Blockage4   Ps4       Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD    cp 2-4
 0.9500     6.1617   523.7063   500.1866     0.0000     0.0600     0.0376    0.1875

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4       Tt2avg      Del T     Ns          Ns nondim
 0.8794    6.4359      1.0637   529.9548    10.0476   230.3414    1.7856

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  63510.746       0.461     91.005  257230.000   0.561794E-02

Melt Ratio at Stator LE, Throat, TE
0.36052E-01 0.47644E-01 0.86871E-01
 trTOT =     1.1484   Tt4 =   529.9548   T1  =   461.4861

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    429858.06    615.9444     83.7264      1.5326      0.8356     15.5776      1.1484     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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              Fan Core + 4 Stage LPC 10% 37357 ft 02-15-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.599   EfDer =  0.953    SH =  0.801890E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.947    2340.176       4.337     459.556       1.000       1.000       0.980
 W Kg/sec =  11.794  Wdry =  25.926  WH2O = 0.021  lbm/sec   H2O =   0.323g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.780    2486.115       1.381       0.249      53.374      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  62052.168   20352.652       3.430     831.557     242.407     619.754       2.557

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   179.09    -0.06   179.09     0.17     0.44   447.56
 MEAN    17.06     0.00    -0.02   179.09    -0.06   179.09     0.17     0.38
 HUB     12.51     0.00    -0.02   179.09    -0.06   179.09     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.97    50.47    16.50   421.30   457.85     4.25   456.98   452.40    28.32
 MEAN    62.80    47.20    15.60   348.40   391.79     4.25   456.98   452.40    28.32
 HUB     54.98    38.62    16.36   255.48   312.05     4.25   456.98   452.40    28.32

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   377.50   291.04   240.42  1053.14     0.36     7.29     6.52    16.04
 MEAN    18.04   381.77   294.14   243.38  1050.26     0.36     7.43     6.80    12.53
 HUB     15.00   413.00   330.65   247.46  1046.73     0.39     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    421.30   273.44   130.26     0.26  6005.52     0.92     0.87
 MEAN   368.33   254.44    74.19     0.24  5306.14     0.92     0.87     0.87     1.77
 HUB    306.33   248.65    24.32     0.24  4960.55     0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.95     1.14     4.54   479.24     1.04   467.80   467.38    26.00
 MEAN     4.88     1.13     4.46   476.95     1.04   465.25   466.10    28.69
 HUB      4.84     1.12     4.36   475.82     1.04   462.13   465.83    32.36

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.44    28.45    24.20     4.25     0.93     0.58     1.80
 MEAN    50.39    16.95    12.70     4.25     0.95     0.52     2.22
 HUB     53.19    -5.61    -9.30     3.69     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.953       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   392.8263   293.5670   261.0190  1049.8777     0.3742    -0.0359     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.8877     4.4432   464.9628   466.6159    30.0031    48.3588    35.4000   -12.9588

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   259.6592    63.5206   251.7698  1057.6929     0.2455     0.5168     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.8768     4.6791   471.9284   465.6169   554.9116     0.0349     0.6090

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   258.5682     0.0000   258.5682  1057.7040     0.2445     0.4850     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.6588   471.9726   466.2039     0.0000     0.0600     0.0870     0.4708
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8135     4.8538     1.1191   477.3308    17.7805   167.3095     1.2970

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 110886.727       0.625     162.590  271029.688   0.143075E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =15.049   EfDer =  0.958    SH =  0.208547E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.947    2340.176       4.854     477.329       1.000       1.000       0.980
 W Kg/sec =  11.794  Wdry =  25.893  WH2O = 0.054  lbm/sec   H2O =   0.895g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.382    2439.478       1.379       0.250      53.416      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58220.656   20342.365       2.673     590.487     220.920     468.502       2.121

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   236.62    -0.08   236.62     0.22     0.46   437.46
 MEAN    18.08     0.00    -0.02   236.62    -0.08   236.62     0.22     0.41
 HUB     15.21     0.00    -0.02   236.62    -0.08   236.62     0.22     0.37

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.59    46.36    14.23   419.67   481.85     4.69   472.85   468.13    39.29
 MEAN    57.35    42.30    15.05   369.19   438.58     4.69   472.85   468.13    39.29
 HUB     52.71    37.84    14.87   310.62   390.54     4.69   472.85   468.13    39.29

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   347.52   241.48   249.92  1070.72     0.32     2.33     2.04     9.02
 MEAN    18.01   347.12   238.42   252.28  1068.44     0.32     2.40     2.13     7.35
 HUB     15.22   367.78   265.11   254.91  1066.20     0.34     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    417.01   305.40   175.53     0.29  4932.73     0.92     0.88
 MEAN   367.80   283.52   129.38     0.27  4295.39     0.92     0.88     0.88     1.70
 HUB    310.88   258.99    45.77     0.24  4036.98     0.92     0.88

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.40     1.11     5.02   493.43     1.03   483.78   478.27    27.79
 MEAN     5.32     1.10     4.95   491.35     1.03   481.72   477.22    29.89
 HUB      5.30     1.09     4.88   490.51     1.03   479.70   477.09    32.10

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     44.02    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN    43.38    27.15    23.50     3.65     0.95     0.52     1.63
 HUB     46.12    10.18     6.50     3.68     0.95     0.51     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.958       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   371.1482   239.0883   283.8798  1067.3268     0.3477    -0.1071     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3350     4.9129   480.7574   477.8318    31.1785    40.1046    30.6000    -9.5046

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   275.0824    58.3194   268.8293  1072.8108     0.2564     0.3669     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3294     5.0946   485.7171   476.7497   491.5697     0.0244     0.4630

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.8235   285.0583     0.0000   285.0583  1072.2954     0.2658     0.3545     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0625	485.2697	477.1040	0.0000	0.0600	0.0656	0.2837

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8320	5.3135	1.0947	491.7609	14.4361	188.9730	1.4649

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
90345.727	0.520	132.471	246562.266	0.236046E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.948 EfDer = 0.974 SH = 0.274761E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.947	2340.176	5.314	491.760	1.000	1.000	0.980

W Kg/sec = 11.794 Wdry = 25.875 WH2O = 0.071 lbm/sec H2O = 1.252g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.893	2403.420	1.378	0.250	53.437	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54825.539	20337.039	2.662	545.479	204.928	424.468	2.071

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	241.21	-0.08	241.21	0.22	0.44	420.93
MEAN	17.74	0.00	-0.02	241.21	-0.08	241.21	0.22	0.41	
HUB	15.05	0.00	-0.02	241.21	-0.08	241.21	0.22	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.53	46.36	13.17	409.87	475.65	5.13	487.12	477.72	30.84
MEAN	56.35	43.40	12.95	362.25	435.28	5.13	487.12	477.72	30.84
HUB	51.88	38.84	13.04	307.35	390.77	5.13	487.12	477.72	30.84

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	339.97	225.27	254.63	1085.18	0.31	2.26	1.98	8.75
MEAN	17.51	341.63	225.40	256.72	1083.25	0.32	2.34	2.07	6.78
HUB	14.85	364.40	256.31	259.03	1081.34	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	404.56	311.42	179.29	0.29	4464.22	0.92	0.89		
MEAN	357.52	288.72	132.12	0.27	3947.46	0.92	0.89	0.89	1.65
HUB	303.27	263.25	46.95	0.24	3807.48	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.84	1.10	5.46	506.30	1.03	497.08	486.26	23.28
MEAN	5.78	1.09	5.40	504.62	1.03	495.31	485.51	24.68
HUB	5.76	1.08	5.33	504.16	1.03	493.57	485.63	26.12

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.50	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	41.28	27.23	23.50	3.73	0.94	0.50	1.62
HUB	44.70	10.27	6.50	3.77	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.974	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	366.9610	226.8794	288.4200	1082.0924	0.3391	-0.1157	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7905	5.3540	494.2922	486.1375	25.7442	38.1896	31.5000	-6.6896

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	284.2022	61.9968	277.3577	1086.7778	0.2615	0.3124	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7870	5.5224	498.5878	485.1771	451.3937	0.0187	0.4349

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	288.9655	0.0000	288.9655	1086.5244	0.2660	0.3374	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5013	498.3697	485.5032	0.0000	0.0600	0.0515	0.2591

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8540	5.7741	1.0867	505.0245	13.2679	195.0235	1.5118

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
83227.336	0.509	122.034	245498.094	0.311029E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.253 EfDer = 0.985 SH = 0.360196E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.947	2340.176	5.774	505.023	1.000	1.000	0.980

W Kg/sec = 11.794 Wdry = 25.853 WH2O = 0.093 lbm/sec H2O = 1.737g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.180	2371.649	1.377	0.251	53.465	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51817.410	20330.154	2.685	513.330	191.212	395.845	2.070

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	242.26	-0.08	242.26	0.22	0.42	398.60
MEAN	16.97	0.00	-0.02	242.26	-0.08	242.26	0.22	0.39	
HUB	14.32	0.00	-0.02	242.26	-0.08	242.26	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.38	46.36	12.02	393.33	462.02	5.58	500.35	486.16	25.89
MEAN	55.05	43.80	11.25	346.57	422.92	5.58	500.35	486.16	25.89
HUB	50.37	37.84	12.53	292.44	379.81	5.58	500.35	486.16	25.89

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	327.60	205.83	254.87	1098.07	0.30	2.16	1.89	8.34
MEAN	16.57	329.30	206.19	256.76	1096.33	0.30	2.24	1.97	6.35
HUB	13.89	350.82	236.83	258.82	1094.62	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	385.57	311.88	179.74	0.28	3887.60	0.92	0.90		
MEAN	338.47	288.83	132.28	0.26	3418.81	0.92	0.90	0.90	1.60
HUB	283.66	263.02	46.83	0.24	3290.76	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.26	1.08	5.89	517.65	1.03	509.12	493.18	20.70
MEAN	6.20	1.07	5.83	516.13	1.02	507.50	492.56	21.76
HUB	6.19	1.07	5.77	515.71	1.02	505.92	492.69	22.84

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.92	35.19	31.50	3.69	0.93	0.48	1.40
MEAN	38.77	27.26	23.50	3.76	0.94	0.47	1.62
HUB	42.46	10.26	6.50	3.76	0.94	0.47	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.985	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	349.6446	207.3513	281.5259	1095.5070	0.3192	-0.0921	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.2142	5.7973	506.7798	493.0782	22.4486	36.3726	32.4000	-3.9726

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	283.0136	63.4717	275.8044	1099.1154	0.2575	0.2721	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2125     5.9370   510.1309   492.3173   432.2457     0.0144     0.4109

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   280.7510     0.0000   280.7510  1099.2104     0.2554     0.3212     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9312   510.2322   492.5751     0.0000     0.0600     0.0420     0.2570

    STAGE EXIT CONDITIONS, STAGE            4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8684     6.2018     1.0741   516.4962    11.4754   210.9562     1.6353

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  72185.813       0.486     105.844  251658.875   0.404351E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.698   EfDer =  0.993    SH =  0.464083E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.947    2340.176       6.202     516.495       1.000       1.000       0.980
 W Kg/sec =  11.794  Wdry =  25.826  WH2O = 0.120  lbm/sec   H2O =   2.355g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     61.370    2345.163       1.375       0.252      53.499      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  49243.586   20321.758       2.829     509.668     180.150     384.739       2.136

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   231.87    -0.08   231.87     0.21     0.40   374.92
 MEAN   15.91     0.00    -0.02   231.87    -0.08   231.87     0.21     0.36
 HUB    13.07     0.00    -0.02   231.87    -0.08   231.87     0.21     0.32

      BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP    58.22    47.36    10.86   374.13   440.23     6.02   512.23   493.26    22.95
 MEAN   54.50    44.80     9.70   324.97   399.28     6.02   512.23   493.26    22.95
 HUB    49.03    38.84    10.19   266.91   353.63     6.02   512.23   493.26    22.95

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   311.32   192.78   244.45  1109.57     0.28     2.05     1.78     7.43
 MEAN   15.50   310.39   188.90   246.29  1107.78     0.28     2.13     1.86     5.75
 HUB    12.59   326.55   212.14   248.26  1106.02     0.30     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   366.37   299.81   173.59     0.27  3459.97     0.92     0.91
 MEAN  316.49   277.38   127.59     0.25  2928.72     0.92     0.91     0.91     1.59
 HUB   257.11   252.30    44.97     0.23  2671.89     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.66     1.07     6.31   527.70     1.02   520.01   499.24    19.11
 MEAN    6.59     1.06     6.25   525.98     1.02   518.34   498.55    20.07
 HUB     6.55     1.06     6.18   525.15     1.02   516.69   498.44    21.06

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    38.26    35.38    31.50     3.88     0.93     0.47     1.40
 MEAN   37.49    27.39    23.50     3.89     0.94     0.45     1.64
 HUB    40.51    10.27     6.50     3.77     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   339.9008   192.3607   280.2319  1106.4363     0.3072    -0.1726     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.5946     6.1838   517.1191   499.1565    20.9522    34.4670    33.0000    -1.4670
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     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG        Cth         Cuth        Cmth       Aoth          Machth     cp 2-Th     Stat Chord
    15.2185   286.6301     65.4522   279.0570  1109.2524      0.2584      0.1513     2.1315

    BlockageTh  PtTh       PsTh       TsTh       TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.5930      6.2988   519.7624    498.5129   410.5396     0.0246     0.3844

     VANED DIFFUSER EXIT:
    R4         C4          Cu4        Cm4        Ao4           Mach4      cp 3-4   Stator Gap
    14.7013   278.8433     0.0000   278.8433  1109.6051      0.2513      0.3075     0.5109

    Blockage4   Ps4       Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     6.3101   520.1039   498.6570     0.0000      0.0600     0.0373     0.1829

     STAGE EXIT CONDITIONS, STAGE            5
     Eff4       Pt4          PR4       Tt2avg       Del T     Ns          Ns nondim
     0.8791     6.5884      1.0623   526.2628      9.7797   231.2794     1.7929

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  61721.898       0.460      90.501  264374.500   0.510813E-02

Melt Ratio at Stator LE, Throat, TE
0.10791E-01 0.17112E-01 0.41805E-01
 trTOT =     1.1452   Tt4 =   526.2628   T1  =   459.5564

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    418367.50    613.4403     82.7803      1.5191      0.8361     15.5991      1.1452     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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              Fan Core + 4 Stage LPC 10% 34281 ft 02-15-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.653   EfDer =  0.953    SH =  0.811165E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     27.855    2268.543       4.829     461.382       1.000       1.000       0.980
 W Kg/sec =  12.661  Wdry =  27.833  WH2O = 0.023  lbm/sec   H2O =   0.363g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     79.982    2405.254       1.381       0.249      53.375      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60013.164   21849.686       3.550     831.557     234.217     619.754       2.646

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   173.21    -0.06   173.21     0.17     0.43   433.01
 MEAN    17.06     0.00    -0.02   173.21    -0.06   173.21     0.17     0.36
 HUB     12.51     0.00    -0.02   173.21    -0.06   173.21     0.17     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     67.02    50.47    16.55   408.41   443.67     4.74   458.97   454.39    29.06
 MEAN    62.85    47.20    15.65   337.74   379.61     4.74   458.97   454.39    29.06
 HUB     55.04    38.62    16.42   247.66   302.27     4.74   458.97   454.39    29.06

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   366.02   282.12   233.19  1054.60      0.35     7.29     6.52    16.04
 MEAN    18.04   370.07   285.16   235.87  1051.91      0.35     7.43     6.80    12.53
 HUB     15.00   400.12   320.49   239.55  1048.61      0.38     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    408.41   265.19   126.29     0.25  5821.35      0.92     0.87
 MEAN   357.06   246.58    71.89     0.23  5144.19      0.92     0.87     0.87     1.77
 HUB    296.95   240.71    23.54     0.23  4808.08      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.47     1.13     5.04   479.88     1.04   469.13   468.58    26.80
 MEAN     5.39     1.12     4.96   477.73     1.04   466.74   467.35    29.36
 HUB      5.35     1.11     4.85   476.66     1.03   463.81   467.07    32.84

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.42    28.44    24.20     4.24     0.93     0.58     1.80
 MEAN    50.40    16.95    12.70     4.25     0.95     0.52     2.22
 HUB     53.22    -5.61    -9.30     3.69     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.953       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   380.7440   284.6075   252.9123  1051.5505     0.3621    -0.0360     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.4005     4.9388   466.4642   467.8342    30.6253    48.3746    35.4000   -12.9746

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   252.1879    61.6929   244.5255  1058.8588     0.2382     0.5165     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3896     5.1836   472.9864   466.9227   554.9116     0.0338     0.6078

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   251.0828     0.0000   251.0828  1058.8729     0.2371     0.4836     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.1621   473.0299   467.4573     0.0000     0.0600     0.0871     0.4694
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8130     5.3652     1.1111   478.0822    16.7057   167.1285     1.2956

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 104191.086       0.625     164.010  289802.156   0.138794E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.998   EfDer =  0.958    SH =  0.198572E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     27.855    2268.543       5.365    478.080       1.000       1.000       0.980
 W Kg/sec =  12.661  Wdry =  27.800  WH2O = 0.055  lbm/sec   H2O =   0.942g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.272    2362.946       1.379       0.250      53.413      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
 56549.461   21839.578       2.750     590.487     214.725     468.502       2.182

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   229.83    -0.08   229.83     0.22     0.44   423.74
 MEAN   18.08     0.00    -0.02   229.83    -0.08   229.83     0.22     0.40
 HUB    15.21     0.00    -0.02   229.83    -0.08   229.83     0.22     0.36

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    60.54    46.36    14.18   406.82   467.33     5.19   473.86   469.24    39.65
 MEAN   57.30    42.30    15.00   357.89   425.40     5.19   473.86   469.24    39.65
 HUB    52.65    37.84    14.81   301.11   378.86     5.19   473.86   469.24    39.65

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   337.22   233.31   243.48  1071.04     0.31     2.33     2.04     9.02
 MEAN   18.01   336.93   230.63   245.62  1068.92     0.32     2.40     2.13     7.35
 HUB    15.22   357.07   256.88   248.01  1066.83     0.33     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   404.25   297.50   170.94     0.28  4765.73     0.92     0.88
 MEAN  356.54   276.02   125.91     0.26  4155.01     0.92     0.88      0.88     1.70
 HUB   301.37   251.97    44.48     0.24  3911.75     0.92     0.88

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     5.93     1.10     5.54   493.17     1.03   484.07   478.93    28.75
 MEAN    5.85     1.09     5.47   491.23     1.03   482.16   477.93    30.77
 HUB     5.82     1.09     5.39   490.46     1.03   480.27   477.80    32.88

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    43.78    35.07    31.50     3.57     0.93     0.54     1.40
 MEAN   43.20    27.14    23.50     3.64     0.95     0.52     1.63
 HUB    46.01    10.17     6.50     3.67     0.95     0.51     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.958       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   360.3117   231.2743   276.2910  1067.8672     0.3374    -0.1078     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   5.8623     5.4243   481.2441   478.4952    32.0210    39.9316    30.6000    -9.3316

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   268.1864    56.8574   262.0900  1072.9822     0.2499     0.3629     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     5.8569     5.6114   485.8709   477.5199   491.5697     0.0234     0.4591

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   277.8279     0.0000   277.8279  1072.4972     0.2590     0.3510     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5780	485.4493	477.8435	0.0000	0.0600	0.0646	0.2796

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8328	5.8404	1.0886	491.6170	13.5405	189.4598	1.4687

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
84719.750	0.518	133.360	263986.250	0.223364E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.792 EfDer = 0.975 SH = 0.257960E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.855	2268.543	5.840	491.616	1.000	1.000	0.980

W Kg/sec = 12.661 Wdry = 27.783 WH2O = 0.072 lbm/sec H2O = 1.295g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.255	2330.192	1.378	0.250	53.432	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53461.438	21834.457	2.726	545.479	200.106	424.468	2.121

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	235.21	-0.08	235.21	0.22	0.43	408.11
MEAN	17.74	0.00	-0.02	235.21	-0.08	235.21	0.22	0.39	
HUB	15.05	0.00	-0.02	235.21	-0.08	235.21	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.38	46.36	13.02	397.32	461.79	5.65	487.20	478.41	31.77
MEAN	56.19	43.40	12.79	351.16	422.73	5.65	487.20	478.41	31.77
HUB	51.72	38.84	12.88	297.94	379.66	5.65	487.20	478.41	31.77

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	330.23	216.93	248.98	1084.56	0.30	2.26	1.98	8.75
MEAN	17.51	332.06	217.54	250.88	1082.76	0.31	2.34	2.07	6.78
HUB	14.85	354.37	248.15	252.98	1080.99	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	392.17	304.47	175.24	0.28	4299.07	0.92	0.89		
MEAN	346.57	282.12	129.03	0.26	3809.82	0.92	0.89	0.89	1.64
HUB	293.98	257.09	45.83	0.24	3686.31	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.38	1.09	5.99	505.20	1.03	496.49	486.58	24.45
MEAN	6.32	1.08	5.93	503.65	1.02	494.85	485.87	25.82
HUB	6.30	1.08	5.86	503.26	1.02	493.24	485.99	27.22

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.06	35.14	31.50	3.64	0.93	0.51	1.40
MEAN	40.93	27.22	23.50	3.72	0.94	0.49	1.62
HUB	44.45	10.27	6.50	3.77	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.975	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	356.8520	218.9676	281.7740	1081.6567	0.3299	-0.1170	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3307	5.8778	493.8797	486.4553	26.8844	37.8509	31.5000	-6.3509

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	278.0768	60.6606	271.3798	1086.0106	0.2561	0.3048	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3276	6.0497	497.8684	485.5909	451.3937	0.0177	0.4286

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	282.6786	0.0000	282.6786	1085.7709	0.2603	0.3316	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.0280	497.6621	485.8881	0.0000	0.0600	0.0501	0.2519

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8557	6.3143	1.0811	504.0338	12.4208	196.2291	1.5212

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
77875.633	0.506	122.586	263263.188	0.290033E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.997 EfDer = 0.986 SH = 0.333324E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.855	2268.543	6.314	504.033	1.000	1.000	0.980

W Kg/sec = 12.661 Wdry = 27.762 WH2O = 0.093 lbm/sec H2O = 1.763g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
63.925	2301.311	1.377	0.251	53.456	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50710.867	21827.939	2.738	513.330	187.502	395.845	2.111

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	237.08	-0.08	237.08	0.22	0.41	386.78
MEAN	16.97	0.00	-0.02	237.08	-0.08	237.08	0.22	0.38	
HUB	14.32	0.00	-0.02	237.08	-0.08	237.08	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.13	46.36	11.77	381.29	449.05	6.11	499.56	486.49	27.06
MEAN	54.80	43.80	11.00	335.97	411.26	6.11	499.56	486.49	27.06
HUB	50.10	37.84	12.26	283.49	369.62	6.11	499.56	486.49	27.06

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	318.61	197.46	250.05	1096.58	0.29	2.16	1.89	8.34
MEAN	16.57	320.57	198.46	251.76	1094.98	0.29	2.24	1.97	6.35
HUB	13.89	341.75	229.06	253.63	1093.40	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	373.76	305.95	176.31	0.28	3729.58	0.92	0.90		
MEAN	328.11	283.18	129.65	0.26	3290.60	0.92	0.90	0.90	1.59
HUB	274.98	257.75	45.92	0.24	3182.80	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.81	1.08	6.43	515.79	1.02	507.71	493.19	21.98
MEAN	6.75	1.07	6.37	514.40	1.02	506.22	492.61	23.01
HUB	6.74	1.07	6.30	514.06	1.02	504.77	492.75	24.07

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.30	35.19	31.50	3.69	0.93	0.47	1.40
MEAN	38.25	27.25	23.50	3.75	0.94	0.46	1.62
HUB	42.09	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.986	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	340.5900	199.5740	275.9923	1094.1804	0.3113	-0.0937	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7643	6.3316	505.5214	493.1027	23.7177	35.8712	32.4000	-3.4712

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	277.8054	62.3036	270.7288	1097.5115	0.2531	0.2612	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.7628     6.4727   508.6103   492.4225   432.2457     0.0136     0.4022

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   275.5558     0.0000   275.5558  1097.6057     0.2511     0.3128     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.4669   508.7091   492.6562     0.0000     0.0600     0.0407     0.2469

    STAGE EXIT CONDITIONS, STAGE            4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8703     6.7520     1.0693   514.7486    10.7183   213.0604     1.6516

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  67368.047       0.482     106.046  270253.000   0.371887E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.353   EfDer =  0.994    SH =  0.423964E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     27.855    2268.543       6.752     514.747       1.000       1.000       0.980
 W Kg/sec =  12.661  Wdry =  27.737  WH2O = 0.118  lbm/sec   H2O =   2.353g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     60.414    2277.233       1.376       0.252      53.486      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  48347.055   21820.082       2.875     509.668     177.301     384.739       2.170

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   227.65    -0.08   227.65     0.21     0.39   364.06
 MEAN   15.91     0.00    -0.02   227.65    -0.08   227.65     0.21     0.35
 HUB    13.07     0.00    -0.02   227.65    -0.08   227.65     0.21     0.31

      BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP    57.89    47.36    10.53   362.68   428.27     6.56   510.63   493.28    24.24
 MEAN   54.15    44.80     9.35   315.03   388.74     6.56   510.63   493.28    24.24
 HUB    48.67    38.84     9.83   258.74   344.70     6.56   510.63   493.28    24.24

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   303.07   184.37   240.53  1107.32     0.27     2.05     1.78     7.43
 MEAN   15.50   302.58   181.35   242.21  1105.67     0.27     2.13     1.86     5.75
 HUB    12.59   318.70   205.02   244.00  1104.05     0.29     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   355.15   295.00   170.78     0.27  3309.05     0.92     0.91
 MEAN  306.80   272.77   125.46     0.25  2811.66     0.92     0.91     0.91     1.58
 HUB   249.24   247.98    44.22     0.22  2582.19     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     7.22     1.07     6.86   525.15     1.02   517.85   498.99    20.44
 MEAN    7.15     1.06     6.79   523.58     1.02   516.32   498.33    21.39
 HUB     7.11     1.05     6.72   522.86     1.02   514.80   498.25    22.37

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    37.47    35.38    31.50     3.88     0.93     0.46     1.40
 MEAN   36.82    27.38    23.50     3.88     0.93     0.44     1.64
 HUB    40.04    10.27     6.50     3.77     0.93     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   331.6776   184.6705   275.5120  1104.3680     0.3003    -0.1752     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.1514     6.7247   515.1352   498.9117    22.3070    33.8332    33.0000    -0.8332
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     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG        Cth         Cuth        Cmth       Aoth          Machth      cp 2-Th      Stat Chord
    15.2185    282.1103     64.4201    274.6566  1106.9442      0.2549      0.1364      2.1315

    BlockageTh  PtTh       PsTh       TsTh       TwetBulbTh  AreaTh      w2-Th      DiffFact4
     0.9500     7.1501      6.8394    517.5477    498.3431   410.5396     0.0237      0.3739

     VANED DIFFUSER EXIT:
    R4         C4           Cu4        Cm4        Ao4            Mach4       cp 3-4    Stator Gap
    14.7013    274.4572      0.0000    274.4572  1107.2880      0.2479      0.2965      0.5109

    Blockage4   Ps4       Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     6.8512    517.8788   498.4748      0.0000     0.0600     0.0368     0.1685

     STAGE EXIT CONDITIONS, STAGE             5
     Eff4       Pt4          PR4       Tt2avg       Del T     Ns          Ns nondim
     0.8802     7.1452      1.0582    523.8531      9.1165   234.3813     1.8169

Del Enthalpy   Del_H/U^2    GHP      Reynolds#         SH
  57465.156        0.456      90.458  284263.063   0.464779E-02

Melt Ratio at Stator LE, Throat, TE
0.98646E-02 0.15579E-01 0.37936E-01
 trTOT =      1.1354   Tt4 =    523.8531   T1  =    461.3822

    OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP         MassFloS1cor   OPR         Efficiency  Rotor1Inc    TR       AxHubLen
    391619.66    616.4596      79.9816      1.4798       0.8375     15.6532      1.1354     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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              Fan Core + 4 Stage LPC 10% 30029 ft 02-15-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =14.166   EfDer =  0.965    SH =  0.106771E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     31.863    2148.455       5.592     471.057       1.000       1.000       0.980
 W Kg/sec =  14.483  Wdry =  31.829  WH2O = 0.034  lbm/sec   H2O =   0.541g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     79.817    2254.434       1.380       0.249      53.383      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60521.504   24990.566       3.557     831.557     233.783     619.754       2.651

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   174.67    -0.06   174.67     0.17     0.40   405.86
 MEAN    17.06     0.00    -0.02   174.67    -0.06   174.67     0.17     0.35
 HUB     12.51     0.00    -0.02   174.67    -0.06   174.67     0.17     0.28

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.70    50.47    15.23   386.79   424.46     5.49   468.61   462.45    28.43
 MEAN    61.37    47.20    14.17   319.86   364.50     5.49   468.61   462.45    28.43
 HUB     53.33    38.62    14.71   234.55   292.49     5.49   468.61   462.45    28.43

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   350.87   259.23   236.45  1063.63     0.33     7.29     6.52    16.04
 MEAN    18.04   357.28   265.78   238.78  1061.36     0.34     7.43     6.80    12.53
 HUB     15.00   389.67   305.34   242.09  1058.47     0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    386.79   268.66   127.55     0.25  5349.22     0.92     0.88
 MEAN   338.15   249.50    72.38     0.24  4794.59     0.92     0.88     0.88     1.67
 HUB    281.23   243.29    24.11     0.23  4580.92     0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.23     1.11     5.78   487.14     1.03   477.27   474.64    27.08
 MEAN     6.16     1.10     5.70   485.47     1.03   475.23   473.76    29.17
 HUB      6.13     1.10     5.59   484.83     1.03   472.65   473.79    32.04

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     47.63    28.35    24.20     4.15     0.93     0.54     1.80
 MEAN    48.06    16.86    12.70     4.16     0.95     0.48     2.22
 HUB     51.59    -5.69    -9.30     3.61     0.95     0.35     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.965       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   368.6875   265.2610   256.0608  1060.9498     0.3475    -0.0413     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.1699     5.6821   474.9241   474.2390    30.3650    46.0110    35.4000   -10.6110

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   256.5764    62.7664   248.7806  1067.1857     0.2404     0.4759     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.1618     5.9221   480.5370   473.3848   554.9116     0.0268     0.5651

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   255.1837     0.0000   255.1837  1067.2202     0.2391     0.4546     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9038   480.5934   473.8968     0.0000     0.0600     0.0721     0.4380
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8311     6.1400     1.0979   485.8065    14.7546   174.3226     1.3513

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  92124.273       0.616     165.878  326349.719   0.169134E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =13.135   EfDer =  0.973    SH =  0.231060E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.863    2148.455       6.140     485.805       1.000       1.000       0.980
 W Kg/sec =  14.483  Wdry =  31.789  WH2O = 0.074  lbm/sec   H2O =   1.234g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.826    2219.998       1.378       0.250      53.423      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57469.355   24978.322       2.729     590.487     216.398     468.502       2.165

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   233.57    -0.08   233.57     0.22     0.42   398.11
 MEAN    18.08     0.00    -0.02   233.57    -0.08   233.57     0.22     0.39
 HUB     15.21     0.00    -0.02   233.57    -0.08   233.57     0.22     0.35

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.78    46.36    12.42   385.29   450.63     5.94   481.45   475.61    38.05
 MEAN    55.44    42.30    13.14   338.95   411.70     5.94   481.45   475.61    38.05
 HUB     50.69    37.84    12.85   285.17   368.68     5.94   481.45   475.61    38.05

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   324.64   208.52   248.82  1077.64     0.30     2.33     2.04     9.02
 MEAN    18.01   326.65   209.48   250.63  1075.93     0.30     2.40     2.13     7.35
 HUB     15.22   348.69   240.32   252.65  1074.24     0.32     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    382.85   303.81   174.34     0.28  4259.53     0.92     0.89
 MEAN   337.66   281.51   128.18     0.26  3774.18     0.92     0.89     0.89     1.61
 HUB    285.41   256.65    45.10     0.24  3659.54     0.92     0.89

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.68     1.09     6.28   498.56     1.03   490.14   483.68    29.38
 MEAN     6.62     1.08     6.21   497.11     1.02   488.58   482.97    30.98
 HUB      6.60     1.08     6.14   496.76     1.02   487.05   483.09    32.63

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.96    35.02    31.50     3.52     0.93     0.49     1.40
 MEAN    39.89    27.09    23.50     3.59     0.94     0.47     1.63
 HUB     43.57    10.12     6.50     3.62     0.94     0.47     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.973       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   351.6312   210.0683   281.9855  1074.8132     0.3272    -0.1212     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6277     6.1610   487.6048   483.5496    32.2627    36.6847    30.6000    -6.0847

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   274.8289    58.2657   268.5816  1079.0328     0.2547     0.2990     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6246     6.3367   491.4452   482.6993   491.5697     0.0172     0.4052

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   284.4936     0.0000   284.4936  1078.5435     0.2638     0.3059     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.3037	491.0131	483.0205	0.0000	0.0600	0.0490	0.2207

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8533	6.6112	1.0768	497.4730	11.6714	202.0251	1.5661

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
73110.016	0.499	131.641	298506.781	0.256096E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =10.704 EfDer = 0.988 SH = 0.289333E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.863	2148.455	6.611	497.472	1.000	1.000	0.980

W Kg/sec = 14.483 Wdry = 31.771 WH2O = 0.092 lbm/sec H2O = 1.623g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.382	2193.813	1.378	0.251	53.442	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54723.387	24972.564	2.681	545.479	203.452	424.468	2.086

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	240.77	-0.08	240.77	0.22	0.41	384.22
MEAN	17.74	0.00	-0.02	240.77	-0.08	240.77	0.22	0.38	
HUB	15.05	0.00	-0.02	240.77	-0.08	240.77	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.39	46.36	11.03	376.29	446.79	6.39	492.85	483.47	32.02
MEAN	54.10	43.40	10.70	332.58	410.65	6.39	492.85	483.47	32.02
HUB	49.54	38.84	10.70	282.17	370.99	6.39	492.85	483.47	32.02

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	319.74	191.15	256.31	1089.00	0.29	2.26	1.98	8.75
MEAN	17.51	323.71	195.69	257.86	1087.60	0.30	2.34	2.07	6.78
HUB	14.85	347.77	231.41	259.60	1086.23	0.32	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	371.41	313.35	180.26	0.29	3788.36	0.92	0.90		
MEAN	328.23	289.93	132.54	0.27	3427.27	0.92	0.90	0.90	1.55
HUB	278.42	263.82	47.01	0.24	3437.72	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.12	1.08	6.71	508.79	1.02	500.64	490.27	25.93
MEAN	7.07	1.07	6.66	507.71	1.02	499.36	489.81	27.02
HUB	7.07	1.07	6.60	507.75	1.02	498.11	490.16	28.12

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.72	35.12	31.50	3.62	0.93	0.45	1.40
MEAN	37.19	27.20	23.50	3.70	0.94	0.44	1.62
HUB	41.71	10.26	6.50	3.76	0.94	0.45	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.988	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	350.3304	196.9705	289.7137	1086.4182	0.3225	-0.1316	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.0840	6.5990	498.3061	490.4164	28.1691	34.2110	31.5000	-2.7110

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	287.0500	62.6180	280.1369	1089.9109	0.2634	0.2289	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.0825	6.7542	501.5195	489.6862	451.3937	0.0135	0.3697

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	291.6534	0.0000	291.6534	1089.6683	0.2677	0.2767	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7332	501.3070	489.9644	0.0000	0.0600	0.0391	0.1806

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8721	7.0714	1.0696	508.0828	10.6129	211.3988	1.6388

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
66610.625	0.483	119.938	298781.500	0.319456E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.672 EfDer = 0.997 SH = 0.358773E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.863	2148.455	7.071	508.082	1.000	1.000	0.980

W Kg/sec = 14.483 Wdry = 31.748 WH2O = 0.114 lbm/sec H2O = 2.106g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.554	2170.786	1.377	0.251	53.465	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52287.801	24965.691	2.669	513.330	192.314	395.845	2.058

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	244.46	-0.08	244.46	0.22	0.40	364.84
MEAN	16.97	0.00	-0.02	244.46	-0.08	244.46	0.22	0.37	
HUB	14.32	0.00	-0.02	244.46	-0.08	244.46	0.22	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.91	46.36	9.55	361.10	436.14	6.83	503.33	490.40	28.15
MEAN	52.47	43.80	8.67	318.18	401.31	6.83	503.33	490.40	28.15
HUB	47.69	37.84	9.85	268.48	363.16	6.83	503.33	490.40	28.15

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	310.65	171.12	259.27	1099.04	0.28	2.16	1.89	8.34
MEAN	16.57	314.74	176.44	260.64	1097.83	0.29	2.24	1.97	6.35
HUB	13.89	337.68	212.85	262.14	1096.65	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	353.98	317.26	182.86	0.29	3232.38	0.92	0.91		
MEAN	310.74	293.20	134.30	0.27	2925.69	0.92	0.91	0.91	1.49
HUB	260.42	266.42	47.57	0.24	2957.75	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.53	1.06	7.13	517.72	1.02	510.05	495.95	23.83
MEAN	7.48	1.06	7.08	516.81	1.02	508.93	495.59	24.66
HUB	7.49	1.06	7.02	516.90	1.02	507.83	495.96	25.49

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.43	35.19	31.50	3.69	0.93	0.41	1.40
MEAN	34.10	27.26	23.50	3.76	0.93	0.40	1.62
HUB	39.08	10.28	6.50	3.78	0.93	0.42	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.997	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	336.4166	177.4300	285.8229	1096.9575	0.3067	-0.1062	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.4966	7.0307	508.1457	496.1091	25.4461	31.8307	32.4000	0.5693

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	288.7728	64.7633	281.4168	1099.5052	0.2626	0.1770	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4957     7.1504   510.5136   495.5692   432.2457     0.0121     0.3390

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   286.3589     0.0000   286.3589  1099.6133     0.2604     0.2475     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.1460   510.6240   495.7659     0.0000     0.0600     0.0367     0.1668

    STAGE EXIT CONDITIONS, STAGE            4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8788     7.4852     1.0585   517.1412     9.0614   232.2558     1.8004

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57000.020       0.455     102.634  307734.594   0.393299E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.818   EfDer =  1.000    SH =  0.438789E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.863    2148.455       7.485     517.140       1.000       1.000       0.980
 W Kg/sec =  14.483  Wdry =  31.723  WH2O = 0.140  lbm/sec   H2O =   2.682g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.480    2151.690       1.376       0.252      53.491      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50199.961   24957.754       2.779     509.668     183.385     384.739       2.098

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   236.38    -0.08   236.38     0.21     0.38   343.99
 MEAN   15.91     0.00    -0.02   236.38    -0.08   236.38     0.21     0.35
 HUB    13.07     0.00    -0.02   236.38    -0.08   236.38     0.21     0.31

      BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP    55.47    47.36     8.11   343.48   417.02     7.25   512.71   496.19    25.71
 MEAN   51.62    44.80     6.82   298.35   380.71     7.25   512.71   496.19    25.71
 HUB    46.04    38.84     7.20   245.05   340.53     7.25   512.71   496.19    25.71

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   296.61   157.84   251.12  1108.06     0.27     2.05     1.78     7.43
 MEAN   15.50   298.67   159.57   252.47  1106.81     0.27     2.13     1.86     5.75
 HUB    12.59   317.00   189.77   253.93  1105.59     0.29     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   336.35   308.11   178.51     0.28  2833.15     0.92     0.91
 MEAN  290.56   284.43   130.99     0.26  2474.24     0.92     0.91     0.91     1.47
 HUB   236.05   258.11    46.28     0.23  2390.24     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     7.90     1.06     7.52   525.56     1.02   518.58   500.84    22.31
 MEAN    7.85     1.05     7.47   524.50     1.01   517.42   500.42    23.09
 HUB     7.84     1.05     7.41   524.25     1.01   516.27   500.56    23.87

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    32.15    35.41    31.50     3.91     0.93     0.40     1.40
 MEAN   32.29    27.42    23.50     3.92     0.93     0.38     1.64
 HUB    36.77    10.33     6.50     3.83     0.93     0.38     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   330.0902   162.4953   287.3235  1105.3966     0.2986    -0.1941     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.8540     7.3906   516.1259   501.0118    24.0957    29.4903    33.0000     3.5097
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   295.2907    67.4299   287.4888  1107.2361     0.2667     0.0311     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     7.8516     7.4789   517.8488   500.5839   410.5396     0.0261     0.3079

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   287.2354     0.0000   287.2354  1107.6143     0.2593     0.2218     0.5109

Blockage4   Ps4       Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     7.4934   518.2098   500.6347     0.0000     0.0600     0.0408     0.0677

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.8778     7.8458     1.0482   524.7513     7.6298   258.4245     2.0033

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  48111.930       0.425      86.630  324572.344   0.468350E-02

Melt Ratio at Stator LE, Throat, TE
0.46533E-01 0.56821E-01 0.90234E-01
 trTOT =     1.1140   Tt4 =   524.7513   T1  =   471.0566

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    336956.88    606.7212     79.8175      1.4030      0.8525     14.1656      1.1140     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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              Fan Core + 4 Stage LPC 10% 25666 ft 02-15-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.342   EfDer =  0.994    SH =  0.135055E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     40.140    1969.919       6.513     481.855       1.000       1.000       0.980
 W Kg/sec =  18.245  Wdry =  40.085  WH2O = 0.054  lbm/sec   H2O =   0.777g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     87.322    2043.816       1.380       0.249      53.392      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  67166.758   31478.881       3.251     831.557     255.818     619.754       2.423

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   193.85    -0.07   193.85      0.18     0.38   367.94
 MEAN    17.06     0.00    -0.02   193.85    -0.07   193.85      0.18     0.33
 HUB     12.51     0.00    -0.02   193.85    -0.07   193.85      0.18     0.27

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     61.34    50.47    10.87   354.65   404.23      6.37   478.85   471.04    26.62
 MEAN    56.54    47.20     9.34   293.28   351.61      6.37   478.85   471.04    26.62
 HUB     47.98    38.62     9.36   215.06   289.58      6.37   478.85   471.04    26.62

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   339.55   212.15   265.11  1071.76      0.32     7.29     6.52    16.04
 MEAN    18.04   352.07   229.55   266.94  1070.27      0.33     7.43     6.80    12.53
 HUB     15.00   392.61   285.02   270.01  1068.00      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    354.65   300.98   142.49     0.28  4378.07      0.92     0.91
 MEAN   310.05   278.82    80.51     0.26  4141.25      0.92     0.91     0.91     1.42
 HUB    257.86   271.37    27.16     0.25  4276.09      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.07     1.09     6.60   493.91     1.03   484.68   480.31    27.36
 MEAN     7.04     1.08     6.54   493.26     1.02   483.33   480.10    28.67
 HUB      7.05     1.08     6.43   493.63     1.02   481.28   480.82    30.76

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.67    28.26    24.20     4.06     0.93     0.40     1.80
 MEAN    40.69    16.78    12.70     4.08     0.93     0.36     2.22
 HUB     46.55    -5.74    -9.30     3.56     0.93     0.24     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   366.8634   229.1008   286.5337  1069.6538     0.3430    -0.0590     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.0478     6.5045   482.8311   480.6245    29.9705    38.6444    35.4000    -3.2444

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   289.3788    70.7909   280.5865  1074.1375     0.2694     0.3405     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.0453     6.7036   486.8987   479.9705   554.9116     0.0148     0.4402

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   287.2808     0.0000   287.2808  1074.2238     0.2674     0.3519     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.6957   486.9954   480.4182     0.0000     0.0600     0.0402     0.3256
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8737     7.0318     1.0797   493.5953    11.7434   199.6584     1.5477

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  73404.313       0.584     166.505  405351.500   0.197496E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.510   EfDer =  0.999    SH =  0.254525E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     40.140    1969.919       7.032     493.593       1.000       1.000       0.980
 W Kg/sec =  18.245  Wdry =  40.038  WH2O = 0.102  lbm/sec   H2O =   1.523g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     81.856    2019.394       1.378       0.250      53.431      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64615.262   31464.045       2.461     590.487     239.977     468.502       1.952

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   262.61    -0.09   262.61     0.24     0.41   362.13
 MEAN    18.08     0.00    -0.02   262.61    -0.09   262.61     0.24     0.38
 HUB     15.21     0.00    -0.02   262.61    -0.09   262.61     0.24     0.34

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.38    46.36     7.02   353.27   440.26     6.75   488.09   481.88    36.10
 MEAN    49.81    42.30     7.51   310.78   406.95     6.75   488.09   481.88    36.10
 HUB     44.89    37.84     7.05   261.47   370.65     6.75   488.09   481.88    36.10

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   321.45   152.72   282.86  1081.70     0.30     2.33     2.04     9.02
 MEAN    18.01   328.00   164.15   283.97  1080.84     0.30     2.40     2.13     7.35
 HUB     15.22   354.54   210.54   285.26  1080.00     0.33     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    351.04   345.45   198.32     0.32  3120.39     0.92     0.91
 MEAN   309.61   319.06   145.46     0.30  2957.93     0.92     0.91     0.91     1.38
 HUB    261.70   289.81    51.15     0.27  3206.50     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.45     1.06     7.01   502.15     1.02   493.91   487.31    30.82
 MEAN     7.42     1.06     6.97   501.71     1.02   493.12   487.17    31.63
 HUB      7.46     1.06     6.93   502.39     1.02   492.36   487.88    32.42

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.37    35.04    31.50     3.54     0.93     0.34     1.40
 MEAN    30.03    27.12    23.50     3.62     0.93     0.34     1.63
 HUB     36.43    10.17     6.50     3.67     0.93     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   359.9833   164.6087   320.1437  1079.3026     0.3335    -0.1625     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.4387     6.8953   491.7464   487.8701    33.3301    27.2109    30.6000     3.3891

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   314.3321    66.6406   307.1867  1081.9917     0.2905     0.1032     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4365     7.0197   494.2019   487.3002   491.5697     0.0145     0.2598

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.8235   325.5053     0.0000   325.5053  1081.3575     0.3010     0.1534     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9786	493.6318	487.6304	0.0000	0.0600	0.0405	0.0164

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8722	7.4242	1.0558	502.0818	8.4898	249.2169	1.9319

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
53224.297	0.432	120.730	373808.156	0.276669E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.607 EfDer = 0.995 SH = 0.303793E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
40.140	1969.919	7.424	502.081	1.000	1.000	0.980

W Kg/sec = 18.245 Wdry = 40.018 WH2O = 0.122 lbm/sec H2O = 1.882g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.193	2002.254	1.377	0.251	53.447	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62410.500	31457.908	2.379	545.479	229.316	424.468	1.851

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	274.59	-0.09	274.59	0.25	0.41	350.67
MEAN	17.74	0.00	-0.02	274.59	-0.09	274.59	0.25	0.38	
HUB	15.05	0.00	-0.02	274.59	-0.09	274.59	0.25	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.49	46.36	5.13	345.02	441.02	7.11	496.07	487.75	32.88
MEAN	48.01	43.40	4.61	304.94	410.42	7.11	496.07	487.75	32.88
HUB	43.31	38.84	4.47	258.72	377.34	7.11	496.07	487.75	32.88

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	324.02	131.59	296.09	1089.19	0.30	2.26	1.98	8.75
MEAN	17.51	331.50	147.69	296.79	1088.70	0.30	2.34	2.07	6.78
HUB	14.85	359.04	200.76	297.67	1088.23	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	340.55	362.40	208.96	0.33	2608.75	0.92	0.91		
MEAN	300.95	334.02	153.26	0.31	2587.19	0.92	0.91	0.91	1.32
HUB	255.28	302.62	54.52	0.28	2982.69	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.78	1.05	7.33	509.23	1.01	500.86	492.16	29.15
MEAN	7.78	1.05	7.30	509.17	1.01	500.41	492.23	29.57
HUB	7.83	1.06	7.27	510.25	1.02	499.98	493.15	29.95

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	23.96	35.21	31.50	3.71	0.93	0.28	1.40
MEAN	26.46	27.31	23.50	3.81	0.92	0.30	1.62
HUB	34.00	10.38	6.50	3.88	0.92	0.33	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	365.8340	148.6575	334.2686	1087.0143	0.3365	-0.1752	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.7929	7.2141	498.8888	492.9915	31.2416	23.9759	31.5000	7.5241

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	333.8533	72.8279	325.8130	1088.9530	0.3066	0.0081	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.7880	7.3040	500.6711	492.5599	451.3937	0.0199	0.2178

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    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   339.6186     0.0000   339.6186  1088.6095     0.3120     0.0984     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.2711   500.3623   492.8079     0.0000     0.0600     0.0553    -0.0580

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8445     7.7704     1.0466   509.5464     7.4664   269.3801     2.0882

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  46882.770       0.404     106.346  376528.656   0.327613E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc = 2.032   EfDer =  0.977    SH =  0.356869E-02

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     40.140    1969.919       7.770     509.545       1.000       1.000       0.980
 W Kg/sec =  18.245  Wdry =  39.996  WH2O = 0.143  lbm/sec   H2O =   2.275g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.263    1987.534       1.377       0.251      53.464      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60634.242   31451.291       2.325     513.330     220.797     395.845       1.793

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1       CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   283.48    -0.10   283.48     0.26     0.40   334.05
 MEAN    16.97     0.00    -0.02   283.48    -0.10   283.48     0.26     0.37
 HUB     14.32     0.00    -0.02   283.48    -0.10   283.48     0.26     0.34

       BetaFlo   BetaBlade Incid   U1        W1          Ps1    Ts1     TwetBulb1  RH
 TIP     49.44    46.36     3.08   331.09   435.95      7.42   503.15   492.79    30.61
 MEAN    45.83    43.80     2.03   291.74   406.85      7.42   503.15   492.79    30.61
 HUB     40.98    37.84     3.14   246.17   375.51      7.42   503.15   492.79    30.61

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     18.88   323.60   108.28   304.95  1095.54      0.30     2.16     1.89     8.34
 MEAN    16.57   330.46   126.40   305.33  1095.30      0.30     2.24     1.97     6.35
 HUB     13.89   356.10   182.24   305.94  1095.08      0.33     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    324.56   373.86   216.28     0.34  2046.22      0.92     0.89
 MEAN   284.92   344.03   158.52     0.31  2096.63      0.92     0.89     0.89     1.27
 HUB    238.78   311.12    56.54     0.28  2532.75      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.05     1.04     7.59   515.14     1.01   506.81   496.20    28.16
 MEAN     8.06     1.04     7.57   515.28     1.01   506.59   496.36    28.34
 HUB      8.12     1.05     7.56   516.47     1.01   506.38   497.29    28.50

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     19.55    35.35    31.50     3.85     0.93     0.23     1.40
 MEAN    22.49    27.44    23.50     3.94     0.91     0.25     1.62
 HUB     30.78    10.47     6.50     3.97     0.91     0.29     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.977       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   358.8789   127.1128   335.6135  1093.9755     0.3281    -0.1431     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.0726     7.5019   505.3895   497.0214    29.5944    20.7441    32.4000    11.6559

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   341.9265    76.6841   333.2166  1094.9951     0.3123    -0.0544     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.0638     7.5449   506.3347   496.7977   432.2457     0.0276     0.1813

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   339.6524     0.0000   339.6524  1095.1234     0.3101     0.0450     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.5276   506.4584   496.8986     0.0000     0.0600     0.0785    -0.0887

    STAGE EXIT CONDITIONS, STAGE            4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.7792     8.0380     1.0344   515.6290     6.0840   309.2015     2.3969

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  38266.465       0.363      86.801  390163.125   0.381880E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-0.354   EfDer =  0.944    SH =  0.413676E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     40.140    1969.919       8.038    515.628       1.000       1.000       0.980
 W Kg/sec =  18.245  Wdry =  39.974  WH2O = 0.166  lbm/sec   H2O =   2.699g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.190    1975.777       1.376       0.252      53.482      77.000       0.050

   CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59250.277   31444.191       2.373     509.668     214.791     384.739       1.791

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   279.00    -0.10   279.00     0.25     0.38   315.86
 MEAN   15.91     0.00    -0.02   279.00    -0.10   279.00     0.25     0.36
 HUB    13.07     0.00    -0.02   279.00    -0.10   279.00     0.25     0.33

      BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP    48.47    47.36     1.11   314.94   420.82     7.69   509.45   496.80    29.00
 MEAN   44.45    44.80    -0.35   273.56   390.80     7.69   509.45   496.80    29.00
 HUB    38.86    38.84     0.02   224.68   358.28     7.69   509.45   496.80    29.00

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   314.85    92.98   300.81  1101.37     0.29     2.05     1.78     7.43
 MEAN   15.50   320.18   108.68   301.17  1101.13     0.29     2.13     1.86     5.75
 HUB    12.59   341.68   160.24   301.78  1100.89     0.31     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   308.40   369.99   215.43     0.34  1669.77     0.92     0.86
 MEAN  266.42   339.98   157.74     0.31  1685.76     0.92     0.86     0.86     1.24
 HUB   216.43   306.96    56.19     0.28  2018.69     0.92     0.86

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     8.26     1.03     7.82   520.18     1.01   512.31   499.55    27.28
 MEAN    8.27     1.03     7.80   520.23     1.01   512.09   499.65    27.46
 HUB     8.31     1.03     7.78   521.14     1.01   511.87   500.37    27.62

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    17.18    35.61    31.50     4.11     0.93     0.20     1.40
 MEAN   19.84    27.64    23.50     4.14     0.90     0.21     1.64
 HUB    27.97    10.55     6.50     4.05     0.90     0.25     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.944       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   361.3752   110.6694   344.0121  1099.0164     0.3288    -0.2471     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.2720     7.6848   510.1505   500.4758    29.2310    17.8331    33.0000    15.1669
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth       Cuth      Cmth      Aoth        Machth    cp 2-Th    Stat Chord
15.2185   357.2191   81.5713  347.7809  1099.2708    0.3250   -0.2639    2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh     w2-Th    DiffFact4
 0.9500     8.2472    7.6747   510.3874   500.4036   410.5396    0.0717    0.1491

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4          Mach4     cp 3-4   Stator Gap
14.7013   347.5238    0.0000   347.5238  1099.8485     0.3160    0.0109    0.5109

Blockage4   Ps4       Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD    cp 2-4
 0.9500     7.6913   510.9273   500.3711     0.0000     0.0600     0.1017   -0.2295

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4       Tt2avg      Del T     Ns          Ns nondim
 0.6927    8.2328      1.0242    520.5114     4.8885   359.6833    2.7882

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  30800.725       0.324      69.866  413488.031   0.437633E-02

Melt Ratio at Stator LE, Throat, TE
0.16851E-01 0.19118E-01 0.28124E-01
 trTOT =     1.0802   Tt4 =   520.5114   T1  =   481.8552

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    242578.56    550.2485     87.3220      1.2641      0.8262      9.3417      1.0802     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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              Fan Core + 4 Stage LPC 10% 20047 ft 02-15-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.734   EfDer =  0.999    SH =  0.186977E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     49.560    1802.713       7.939     496.977       1.000       1.000       0.980
 W Kg/sec =  22.527  Wdry =  49.467  WH2O = 0.093  lbm/sec   H2O =   1.270g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     89.822    1841.680       1.379       0.250      53.409      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  70259.188   38858.402       3.159     831.557     263.238     619.754       2.354

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   202.78    -0.07   202.78      0.19     0.35   331.55
 MEAN    17.06     0.00    -0.02   202.78    -0.07   202.78      0.19     0.31
 HUB     12.51     0.00    -0.02   202.78    -0.07   202.78      0.19     0.26

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.01    50.47     7.54   324.54   382.74     7.75   493.69   482.59    24.27
 MEAN    52.93    47.20     5.73   268.38   336.43     7.75   493.69   482.59    24.27
 HUB     44.15    38.62     5.53   196.80   282.63     7.75   493.69   482.59    24.27

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.66   173.75   280.15  1085.49     0.30     7.29     6.52    16.04
 MEAN    18.04   344.39   198.63   281.34  1084.62     0.32     7.43     6.80    12.53
 HUB     15.00   387.86   264.27   283.89  1082.89     0.36     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    324.54   318.16   150.80     0.29  3585.87     0.92     0.91
 MEAN   283.74   293.93    85.11     0.27  3583.70     0.92     0.91     0.91     1.28
 HUB    235.97   285.30    28.29     0.26  3964.89     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.43     1.06     7.91   506.00     1.02   497.31   489.69    26.23
 MEAN     8.43     1.06     7.87   505.99     1.02   496.51   489.86    26.91
 HUB      8.48     1.07     7.77   506.95     1.02   494.92   490.94    28.30

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.81    28.29    24.20     4.09     0.93     0.29     1.80
 MEAN    35.22    16.83    12.70     4.13     0.92     0.26     2.22
 HUB     42.95    -5.69    -9.30     3.61     0.92     0.16     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   361.3868   198.2447   302.1581  1083.8682     0.3334    -0.0732     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.4406     7.8243   495.8839   490.4179    28.1529    33.2687    35.4000     2.1313

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   307.1950    75.1493   297.8613  1087.0133     0.2826     0.2325     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.4385     7.9898   498.7771   489.9331   554.9116     0.0136     0.3525

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   304.8922     0.0000   304.8922  1087.1208     0.2805     0.2569     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.9826   498.8901   490.3451     0.0000     0.0600     0.0382     0.2205
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8727     8.4239     1.0611   506.3093     9.3345   221.6512     1.7182

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  58463.090       0.555     163.735  489634.719   0.256622E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.306   EfDer =  0.988    SH =  0.317396E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.560    1802.713       8.424     506.307       1.000       1.000       0.980
 W Kg/sec =  22.527  Wdry =  49.402  WH2O = 0.157  lbm/sec   H2O =   2.211g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     85.445    1824.638       1.377       0.251      53.451      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68535.438   38838.367       2.356     590.487     250.601     468.502       1.870

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   278.55    -0.10   278.55     0.26     0.39   327.21
 MEAN    18.08     0.00    -0.02   278.55    -0.10   278.55     0.26     0.37
 HUB     15.21     0.00    -0.02   278.55    -0.10   278.55     0.26     0.34

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.26    46.36     2.90   323.29   426.81     8.05   500.13   491.69    33.21
 MEAN    45.61    42.30     3.31   284.40   398.15     8.05   500.13   491.69    33.21
 HUB     40.67    37.84     2.83   239.28   367.27     8.05   500.13   491.69    33.21

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   322.08   107.72   303.53  1092.07     0.29     2.33     2.04     9.02
 MEAN    18.01   329.32   127.05   303.83  1091.90     0.30     2.40     2.13     7.35
 HUB     15.22   355.76   184.24   304.33  1091.74     0.33     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    321.24   371.11   213.52     0.34  2201.58     0.92     0.90
 MEAN   283.33   341.66   156.27     0.31  2289.92     0.92     0.90      0.90     1.25
 HUB    239.48   309.30    55.24     0.28  2806.18     0.92     0.90

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.73     1.04     8.23   511.82     1.01   503.56   495.23    30.74
 MEAN     8.74     1.04     8.22   512.04     1.01   503.41   495.44    30.88
 HUB      8.82     1.05     8.20   513.34     1.01   503.26   496.44    31.00

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     19.54    35.12    31.50     3.62     0.93     0.22     1.40
 MEAN    22.69    27.22    23.50     3.72     0.92     0.24     1.63
 HUB     31.19    10.29     6.50     3.79     0.92     0.29     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.988       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   365.9027   127.4076   343.0045  1090.0734     0.3357    -0.1930     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.7579     8.1108   501.7441   496.2296    32.7355    20.3773    30.6000    10.2227

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   338.7352    71.8143   331.0351  1091.7266     0.3103    -0.0391     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.7496     8.1934   503.2683   495.8481   491.5697     0.0251     0.1645

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.8235   351.3958     0.0000   351.3958  1090.9663     0.3221     0.0286     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1293	502.5735	496.1924	0.0000	0.0600	0.0697	-0.1559

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8031	8.7251	1.0358	512.4006	6.0935	300.7329	2.3313

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
38282.043	0.371	107.215	454294.906	0.340171E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =-0.060 EfDer = 0.949 SH = 0.366637E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.560	1802.713	8.725	512.400	1.000	1.000	0.980

W Kg/sec = 22.527 Wdry = 49.378 WH2O = 0.182 lbm/sec H2O = 2.603g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
82.989	1813.760	1.377	0.251	53.467	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
67237.391	38830.781	2.240	545.479	243.480	424.468	1.743

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	295.82	-0.10	295.82	0.27	0.40	317.66
MEAN	17.74	0.00	-0.02	295.82	-0.10	295.82	0.27	0.37	
HUB	15.05	0.00	-0.02	295.82	-0.10	295.82	0.27	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	46.87	46.36	0.51	315.73	432.74	8.30	505.44	496.06	32.24
MEAN	43.34	43.40	-0.06	279.06	406.74	8.30	505.44	496.06	32.24
HUB	38.68	38.84	-0.16	236.76	378.97	8.30	505.44	496.06	32.24

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	333.59	82.58	323.21	1096.40	0.30	2.26	1.98	8.75
MEAN	17.51	340.43	107.66	322.96	1096.68	0.31	2.34	2.07	6.78
HUB	14.85	366.70	173.51	323.05	1096.95	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	311.64	396.15	229.07	0.36	1637.93	0.92	0.87		
MEAN	275.41	363.93	167.75	0.33	1886.48	0.92	0.87	0.87	1.19
HUB	233.61	328.59	60.11	0.30	2578.09	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.95	1.03	8.40	516.50	1.01	507.65	498.76	30.91
MEAN	8.98	1.03	8.41	517.12	1.01	507.90	499.15	30.66
HUB	9.08	1.04	8.41	518.85	1.01	508.16	500.35	30.38

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	14.33	35.33	31.50	3.83	0.93	0.15	1.40
MEAN	18.44	27.45	23.50	3.95	0.90	0.19	1.62
HUB	28.24	10.54	6.50	4.04	0.90	0.25	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.949	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	380.2576	108.3617	364.4909	1094.5944	0.3474	-0.2074	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.9975	8.2881	505.9953	500.0504	32.6768	16.5570	31.5000	14.9430

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	366.3336	79.9132	357.5111	1095.4879	0.3344	-0.1444	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.9812	8.3227	506.8222	499.8265	451.3937	0.0373	0.1200

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	373.5992	0.0000	373.5992	1095.0221	0.3412	-0.0361	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.2625	506.3958	500.0617	0.0000	0.0600	0.1002	-0.2456

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.6839	8.9438	1.0251	517.4873	5.0876	340.6479	2.6407

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
32011.021	0.330	89.652	460067.813	0.388910E-02

Melt Ratio at Stator LE, Throat, TE
0.59957E-03 0.59957E-03 0.59957E-03

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =-3.132 EfDer = 0.891 SH = 0.414452E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.560	1802.713	8.944	517.486	1.000	1.000	0.980

W Kg/sec = 22.527 Wdry = 49.354 WH2O = 0.205 lbm/sec H2O = 2.975g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
81.361	1804.824	1.376	0.252	53.483	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
66490.844	38823.406	2.150	513.330	238.774	395.845	1.658

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	310.86	-0.11	310.86	0.28	0.40	303.34
MEAN	16.97	0.00	-0.02	310.86	-0.11	310.86	0.28	0.37	
HUB	14.32	0.00	-0.02	310.86	-0.11	310.86	0.28	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	44.28	46.36	-2.08	302.99	434.17	8.47	509.81	499.66	31.55
MEAN	40.67	43.80	-3.13	266.98	409.84	8.47	509.81	499.66	31.55
HUB	35.94	37.84	-1.90	225.28	383.97	8.47	509.81	499.66	31.55

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	343.48	55.41	338.98	1099.65	0.31	2.16	1.89	8.34
MEAN	16.57	348.60	83.97	338.33	1100.27	0.32	2.24	1.97	6.35
HUB	13.89	372.03	155.06	338.17	1100.88	0.34	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	297.01	416.27	241.60	0.38	1048.23	0.92	0.82		
MEAN	260.73	381.73	176.76	0.35	1393.54	0.92	0.82	0.82	1.14
HUB	218.51	344.07	63.45	0.31	2155.36	0.92	0.82		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.08	1.02	8.50	520.10	1.01	510.74	501.52	31.23
MEAN	9.12	1.02	8.52	520.96	1.01	511.32	501.97	30.66
HUB	9.22	1.03	8.53	522.87	1.01	511.88	503.19	30.08

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	9.28	35.48	31.50	3.98	0.93	0.09	1.40
MEAN	13.94	27.58	23.50	4.08	0.89	0.13	1.62
HUB	24.63	10.63	6.50	4.13	0.89	0.21	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.891	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	382.1612	84.4429	372.7152	1098.5358	0.3479	-0.1703	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1366	8.4146	509.7174	502.7592	32.2632	12.7655	32.4000	19.6345

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	382.2050	85.7174	372.4691	1098.5321	0.3479	-0.1994	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1126     8.3922   509.7138   502.7531   432.2457     0.0482     0.0837

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   380.6141     0.0000   380.6141  1098.6300     0.3464    -0.0876     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.3514   509.8062   502.7459     0.0000     0.0600     0.1294    -0.2646

    STAGE EXIT CONDITIONS, STAGE            4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.4863     9.0618     1.0132   521.3029     3.8245   419.1606     3.2493

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  24097.242       0.273      67.488  479330.313   0.431394E-02

Melt Ratio at Stator LE, Throat, TE
0.37744E-01 0.41741E-01 0.54528E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-5.984   EfDer =  0.828    SH =  0.451319E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.560    1802.713       9.062    521.299       1.000       1.000       0.980
 W Kg/sec =  22.527  Wdry =  49.336  WH2O = 0.224  lbm/sec   H2O =   3.259g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.597    1798.207       1.375       0.252      53.495      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66111.844   38817.711       2.154     509.668     236.587     384.739       1.626

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   311.31    -0.11   311.31     0.28     0.38   287.47
 MEAN   15.91     0.00    -0.02   311.31    -0.11   311.31     0.28     0.36
 HUB    13.07     0.00    -0.02   311.31    -0.11   311.31     0.28     0.34

      BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP    42.80    47.36    -4.56   288.20   424.31     8.58   513.61   502.03    30.27
 MEAN   38.82    44.80    -5.98   250.34   399.55     8.58   513.61   502.03    30.27
 HUB    33.46    38.84    -5.38   205.61   373.14     8.58   513.61   502.03    30.27

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   342.08    37.38   340.03  1102.76     0.31     2.05     1.78     7.43
 MEAN   15.50   345.51    64.83   339.37  1103.46     0.31     2.13     1.86     5.75
 HUB    12.59   364.68   133.77   339.26  1104.12     0.33     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   282.23   419.01   244.84     0.38   672.61     0.92     0.76
 MEAN  243.80   383.67   178.98     0.35  1006.35     0.92     0.76     0.76     1.11
 HUB   198.06   345.30    64.29     0.31  1685.60     0.92     0.76

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     9.14     1.01     8.56   522.97     1.00   513.69   503.36    30.56
 MEAN    9.18     1.01     8.59   523.80     1.00   514.34   503.76    29.94
 HUB     9.27     1.02     8.60   525.50     1.01   514.95   504.79    29.32

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     6.27    35.76    31.50     4.26     0.93     0.04     1.40
 MEAN   10.81    27.81    23.50     4.31     0.87     0.09     1.64
 HUB    21.52    10.73     6.50     4.23     0.87     0.16     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.828       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   394.6511    66.0142   389.0907  1100.6558     0.3586    -0.2825     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.1852     8.4168   511.7405   504.8223    32.3752     9.6293    33.0000    23.3707
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   407.5116    93.0556   396.7447  1099.7764     0.3705    -0.4384     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     9.1296     8.3166   510.9206   505.0247   410.5396     0.1108     0.0564

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   396.2725     0.0000   396.2725  1100.5399     0.3601    -0.0987     0.5109

Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     8.3410   511.6303   504.8395     0.0000     0.0600     0.1443    -0.3985

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.2666     9.1091     1.0052   524.0796     2.7927   528.7075     4.0985

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  17614.361       0.221      49.332  510293.469   0.464989E-02

Melt Ratio at Stator LE, Throat, TE
0.12035E+00 0.12661E+00 0.14481E+00
 trTOT =     1.0545   Tt4 =   524.0796   T1  =   496.9769

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    170467.77    477.4229     89.8218      1.1474      0.7025      5.7342      1.0545     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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              Fan Core + 4 Stage LPC 10% 15435 ft 02-15-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 6.926   EfDer =  1.000    SH =  0.259203E-02

    W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
      47.987    1583.382       9.337     510.164       1.000       1.000       0.980
 W Kg/sec =  21.812  Wdry =  47.863  WH2O = 0.124  lbm/sec   H2O =   2.028g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
      74.925    1596.573       1.378       0.250      53.432      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
   59081.984   37614.871       3.785     831.557     219.685     619.754       2.821

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   170.52    -0.06   170.52     0.16     0.30   287.42
 MEAN    17.06     0.00    -0.02   170.52    -0.06   170.52     0.16     0.27
 HUB     12.51     0.00    -0.02   170.52    -0.06   170.52     0.16     0.22

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     59.12    50.47     8.65   285.06   332.22     9.18   507.85   492.44    23.03
 MEAN    54.13    47.20     6.93   235.73   290.99     9.18   507.85   492.44    23.03
 HUB     45.40    38.62     6.78   172.86   242.85     9.18   507.85   492.44    23.03

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   284.18   158.20   236.07  1100.08      0.26     7.29     6.52    16.04
 MEAN    18.04   296.16   177.75   236.89  1099.35      0.27     7.43     6.80    12.53
 HUB     15.00   332.12   231.15   238.48  1098.02      0.30     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    285.06   267.99   126.85     0.24  3264.95      0.92     0.91
 MEAN   249.21   247.43    71.46     0.23  3206.94      0.92     0.91     0.91     1.32
 HUB    207.26   239.67    23.89     0.22  3467.99      0.92     0.91

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP       9.78     1.05     9.35   517.36     1.01   510.92   498.24    25.16
 MEAN      9.78     1.05     9.30   517.23     1.01   510.23   498.30    25.68
 HUB       9.81     1.05     9.22   517.81     1.01   509.01   499.02    26.64

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      33.83    28.25    24.20     4.05     0.93     0.33     1.80
 MEAN     36.88    16.79    12.70     4.09     0.93     0.29     2.22
 HUB      44.11    -5.72    -9.30     3.58     0.93     0.18     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       1.000       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   309.8773   177.4065   254.0687  1098.8041     0.2820    -0.0684     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     9.7856     9.2679   509.8144   498.7571    26.6210    34.9251    35.4000     0.4749

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   259.1602    63.3985   251.2859  1101.2593     0.2353     0.2616     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     9.7850     9.4202   512.1082   498.3720   554.9116     0.0111     0.3749

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   257.1295     0.0000   257.1295  1101.3135     0.2335     0.2824     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.4141   512.1731   498.7340     0.0000     0.0600     0.0367     0.2494
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8800     9.7722     1.0466   517.4351     7.2998   214.2408     1.6608

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  45844.344       0.564     124.321  462566.313   0.343411E-02

Melt Ratio at Stator LE, Throat, TE
0.33204E-01 0.49243E-01 0.10520E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 4.410   EfDer =  0.995    SH =  0.400283E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     47.987    1583.382       9.772    517.423       1.000       1.000       0.980
 W Kg/sec =  21.812  Wdry =  47.795  WH2O = 0.192  lbm/sec   H2O =   3.194g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     72.098    1585.316       1.376       0.252      53.478      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
 57917.383   37593.836       2.791     590.487     211.569     468.502       2.214

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   235.39    -0.08   235.39     0.21     0.33   284.29
 MEAN   18.08     0.00    -0.02   235.39    -0.08   235.39     0.21     0.31
 HUB    15.21     0.00    -0.02   235.39    -0.08   235.39     0.21     0.29

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    50.35    46.36     3.99   283.95   368.90     9.47   513.02   499.83    30.28
 MEAN   46.71    42.30     4.41   249.80   343.29     9.47   513.02   499.83    30.28
 HUB    41.77    37.84     3.93   210.17   315.62     9.47   513.02   499.83    30.28

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   276.46   101.62   257.11  1105.19     0.25     2.33     2.04     9.02
 MEAN   18.01   282.63   116.73   257.40  1104.96     0.26     2.40     2.13     7.35
 HUB    15.22   305.47   163.84   257.82  1104.74     0.28     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   282.16   314.16   180.54     0.28  2076.72     0.92     0.91
 MEAN  248.85   289.33   132.13     0.26  2103.73     0.92     0.91     0.91     1.28
 HUB   210.35   261.98    46.51     0.24  2495.35     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.06     1.03     9.64   521.97     1.01   515.90   502.60    28.32
 MEAN   10.07     1.03     9.62   522.03     1.01   515.69   502.70    28.49
 HUB    10.12     1.04     9.61   522.89     1.01   515.48   503.39    28.65

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    21.57    35.08    31.50     3.58     0.93     0.25     1.40
 MEAN   24.39    27.17    23.50     3.67     0.92     0.26     1.63
 HUB    32.44    10.23     6.50     3.73     0.92     0.30     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.995       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   312.4315   117.0555   289.6747  1103.7185     0.2831    -0.1822     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
  10.0777     9.5411   514.5419   503.2419    29.5627    22.0033    30.6000     8.5967

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   286.4012    60.7191   279.8908  1105.0374     0.2592    -0.0053     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500    10.0739     9.6209   515.7733   502.9241   491.5697     0.0184     0.1856

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   296.4303     0.0000   296.4303  1104.5154     0.2684     0.0568     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.5716	515.2906	503.1220	0.0000	0.0600	0.0607	-0.1127

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8343	10.0545	1.0289	522.2661	4.8743	286.5204	2.2211

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
30702.379	0.386	83.259	428762.063	0.416443E-02

Melt Ratio at Stator LE, Throat, TE
0.22387E+00 0.23950E+00 0.28440E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 0.959 EfDer = 0.964 SH = 0.432988E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
47.987	1583.382	10.054	522.258	1.000	1.000	0.980

W Kg/sec = 21.812 Wdry = 47.780 WH2O = 0.208 lbm/sec H2O = 3.512g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.400	1577.967	1.376	0.252	53.489	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56990.090	37588.949	2.640	545.479	206.635	424.468	2.054

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	250.74	-0.09	250.74	0.23	0.34	276.36
MEAN	17.74	0.00	-0.02	250.74	-0.09	250.74	0.23	0.32	
HUB	15.05	0.00	-0.02	250.74	-0.09	250.74	0.23	0.29	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	47.89	46.36	1.53	277.32	373.93	9.71	517.27	502.94	28.76
MEAN	44.36	43.40	0.96	245.10	350.70	9.71	517.27	502.94	28.76
HUB	39.68	38.84	0.84	207.96	325.81	9.71	517.27	502.94	28.76

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	285.44	79.75	274.07	1108.71	0.26	2.26	1.98	8.75
MEAN	17.51	291.65	99.84	274.03	1108.80	0.26	2.34	2.07	6.78
HUB	14.85	314.70	154.48	274.18	1108.90	0.28	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	273.73	335.77	193.97	0.30	1581.63	0.92	0.88		
MEAN	241.90	308.67	142.06	0.28	1749.41	0.92	0.88	0.88	1.22
HUB	205.19	278.83	50.72	0.25	2295.25	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.27	1.02	9.82	525.71	1.01	519.25	505.02	27.44
MEAN	10.29	1.02	9.82	526.08	1.01	519.33	505.26	27.37
HUB	10.37	1.03	9.82	527.28	1.01	519.42	506.10	27.28

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	16.22	35.29	31.50	3.79	0.93	0.18	1.40
MEAN	20.02	27.40	23.50	3.90	0.91	0.21	1.62
HUB	29.40	10.48	6.50	3.98	0.91	0.27	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.964	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	324.1210	100.4966	308.1474	1107.3849	0.2927	-0.1963	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3068	9.7216	518.0162	505.8516	28.4799	18.0628	31.5000	13.4372

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	309.6278	67.5432	302.1710	1108.1560	0.2794	-0.1102	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.2978	9.7622	518.7373	505.6476	451.3937	0.0283	0.1394

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	315.0720	0.0000	315.0720	1107.8418	0.2844	-0.0102	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.7156	518.4459	505.7366	0.0000	0.0600	0.0901	-0.2042

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7368	10.2671	1.0212	526.3192	4.0991	323.4248	2.5072

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
25843.408	0.345	70.082	434643.813	0.443894E-02

Melt Ratio at Stator LE, Throat, TE
0.40382E+00 0.41969E+00 0.46465E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =-2.138 EfDer = 0.912 SH = 0.455469E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
47.987	1583.382	10.267	526.309	1.000	1.000	0.980

W Kg/sec = 21.812 Wdry = 47.769 WH2O = 0.219 lbm/sec H2O = 3.733g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.209	1571.879	1.375	0.252	53.496	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56390.766	37585.582	2.527	513.330	203.168	395.845	1.948

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	263.64	-0.09	263.64	0.24	0.34	264.19
MEAN	16.97	0.00	-0.02	263.64	-0.09	263.64	0.24	0.32	
HUB	14.32	0.00	-0.02	263.64	-0.09	263.64	0.24	0.30	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	45.28	46.36	-1.08	266.13	374.67	9.88	520.80	505.32	27.15
MEAN	41.66	43.80	-2.14	234.49	352.90	9.88	520.80	505.32	27.15
HUB	36.90	37.84	-0.94	197.87	329.69	9.88	520.80	505.32	27.15

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	292.62	56.44	287.12	1111.44	0.26	2.16	1.89	8.34
MEAN	16.57	297.62	79.35	286.84	1111.77	0.27	2.24	1.97	6.35
HUB	13.89	318.40	138.24	286.82	1112.10	0.29	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	260.88	352.47	204.43	0.32	1067.42	0.92	0.83		
MEAN	229.01	323.54	149.66	0.29	1316.63	0.92	0.83	0.83	1.16
HUB	191.93	291.81	53.69	0.26	1921.43	0.92	0.83		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.41	1.01	9.93	528.63	1.00	521.85	506.76	26.50
MEAN	10.44	1.02	9.94	529.18	1.01	522.16	507.06	26.26
HUB	10.52	1.02	9.95	530.50	1.01	522.47	507.91	25.99

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	11.12	35.45	31.50	3.95	0.93	0.11	1.40
MEAN	15.46	27.55	23.50	4.05	0.89	0.15	1.62
HUB	25.73	10.60	6.50	4.10	0.89	0.22	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.912	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	324.9496	79.7934	315.0004	1110.5967	0.2926	-0.1614	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.4499	9.8571	521.0604	507.5642	27.1108	14.2147	32.4000	18.1853

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	322.4278	72.3111	314.2145	1110.7273	0.2903	-0.1669	2.2705

```
   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4355     9.8513   521.1821   507.5144   432.2457     0.0380     0.1020

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   320.5824     0.0000   320.5824  1110.8020     0.2886    -0.0656     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.8183   521.2530   507.4550     0.0000     0.0600     0.1212    -0.2307

    STAGE EXIT CONDITIONS, STAGE            4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.5646    10.3924     1.0122   529.3992     3.1302   393.6498     3.0515

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  19747.289       0.290      53.551  453084.281   0.463055E-02

Melt Ratio at Stator LE, Throat, TE
0.58271E+00 0.59701E+00 0.63911E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-4.984   EfDer =  0.850    SH =  0.471634E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     47.987    1583.382      10.392     529.388       1.000       1.000       0.980
 W Kg/sec =  21.812  Wdry =  47.761  WH2O = 0.226  lbm/sec   H2O =   3.890g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     68.574    1567.300       1.375       0.252      53.501      77.000       0.050

   CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  56035.848   37583.160       2.532     509.668     201.326     384.739       1.911

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   263.87    -0.09   263.87     0.24     0.33   250.56
 MEAN   15.91     0.00    -0.02   263.87    -0.09   263.87     0.24     0.31
 HUB    13.07     0.00    -0.02   263.87    -0.09   263.87     0.24     0.29

      BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP    43.82    47.36    -3.54   253.14   365.72    10.00   523.87   506.89    25.54
 MEAN   39.82    44.80    -4.98   219.88   343.53    10.00   523.87   506.89    25.54
 HUB    34.40    38.84    -4.44   180.60   319.80    10.00   523.87   506.89    25.54

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   290.49    41.01   287.58  1114.02     0.26     2.05     1.78     7.43
 MEAN   15.50   294.09    62.83   287.29  1114.40     0.26     2.13     1.86     5.75
 HUB    12.59   311.25   119.71   287.30  1114.77     0.28     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   247.89   354.27   206.88     0.32   737.33     0.92     0.78
 MEAN  214.14   324.70   151.31     0.29   975.21     0.92     0.78      0.78     1.13
 HUB   173.96   292.38    54.25     0.26  1508.38     0.92     0.78

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.48     1.01    10.01   530.99     1.00   524.30   507.95    25.32
 MEAN   10.51     1.01    10.02   531.51     1.00   524.66   508.21    25.06
 HUB    10.58     1.02    10.03   532.68     1.01   525.00   508.92    24.77

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     8.12    35.73    31.50     4.23     0.93     0.07     1.40
 MEAN   12.34    27.77    23.50     4.27     0.88     0.11     1.64
 HUB    22.62    10.69     6.50     4.19     0.88     0.18     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.850       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   333.9125    63.9853   327.7246  1112.5076     0.3001    -0.2695     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.5138     9.8875   522.8798   508.8556    26.3342    11.0475    33.0000    21.9525
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     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG        Cth         Cuth        Cmth       Aoth          Machth      cp 2-Th      Stat Chord
    15.2185    341.5939     78.0033    332.5686  1112.0642      0.3072     -0.3870      2.1315

    BlockageTh  PtTh       PsTh       TsTh       TwetBulbTh  AreaTh       w2-Th      DiffFact4
     0.9500     10.4785     9.8247    522.4607    508.9240   410.5396      0.0901      0.0732

     VANED DIFFUSER EXIT:
    R4         C4          Cu4        Cm4        Ao4           Mach4       cp 3-4    Stator Gap
    14.7013    332.6145     0.0000    332.6145  1112.5494      0.2990     -0.0833      0.5109

    Blockage4   Ps4       Ts4        TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD      cp 2-4
     0.9500     9.8353    522.9161   508.7715      0.0000      0.0600     0.1400     -0.3660

     STAGE EXIT CONDITIONS, STAGE            5
     Eff4       Pt4          PR4       Tt2avg       Del T      Ns          Ns nondim
     0.3679     10.4533      1.0059    531.6813      2.3357    488.6016     3.7876

Del Enthalpy   Del_H/U^2    GHP       Reynolds#         SH
  14741.917       0.240      39.977  482866.969   0.477473E-02

Melt Ratio at Stator LE, Throat, TE
0.75422E+00 0.76743E+00 0.80675E+00
 trTOT =     1.0422   Tt4 =   531.6813   T1  =   510.1644

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP         MassFloS1cor   OPR         Efficiency  Rotor1Inc    TR       AxHubLen
    136879.33    371.1910      74.9247      1.1195       0.7424      6.9260      1.0422     37.3740
```

Appendix N: NPSS cycle analysis for the descent conditions

10μm, ISA +18R

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**********************************************************************************************************************************
Date:05/13/13    Time:07:06:30    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 26/ 1/10    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 463.30    Stator 1 exit: 470.73    Stator 2 inlet: 480.06    Stator 2 exit: 484.84
            Stator 3 inlet: 494.48    Stator 3 exit: 498.82    Stator 4 inlet: 507.82    Stator 4 exit: 511.52
            Stator 5 inlet: 518.91    Stator 5 exit: 522.14            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.76
Fan Bypass Relative Humidity       1.24
LPC Inlet Relative Humidity        1.13
LPC Exit Relative Humidity         0.10
HPC Relative Humidity              0.01
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          772.64    Fan/LPC Inlet Flow Velocity        187.38
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   454.81
Additional Water at LPC Exit   0.0014826

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.780   39000.0    18.00    257.31      614.8    1.1256     692.01    8.6213    772.64     9.491     0.736         10.000      1698.5   1606.4   1116.6


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht      FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair    WH2O  H2O frac
FS0   Ambient.Fl_O          257.31     4.267    457.74    -20.96   0.0000    832.56     2.854    407.97    2539.9  0.7800   1.40084   0.0000295    257.30   0.008    0.0000
FS1   Inlet.Fl_O            257.31     4.267    457.74    -20.96   0.0000    832.56     3.893    445.88    4168.2  0.3643   1.40084   0.0000295    257.30   0.008    0.0000
FS12  Splitter.Fl_02        230.57     4.265    457.74    -20.96   0.0000    746.40     3.840    444.21    3531.8  0.3898   1.40084   0.0000295    230.56   0.007    0.0000
FS2   Splitter.Fl_01         26.74     4.265    457.74    -20.96   0.0000     86.58     4.170    454.81     830.5  0.1792   1.40084   0.0000295     26.74   0.001    0.0000
FS14  Fan.Fl_O              230.57     4.813    475.56    -16.68   0.0000    674.05     4.039    452.29    2606.7  0.5067   1.40071   0.0000295    230.56   0.007    0.0000
FS23  LPC.Fl_O               26.74     6.647    531.58     -3.25   0.0000     59.86     6.354    524.79     412.6  0.2543   1.40005   0.0000295     26.74   0.001    0.0000
FS24  VaporIN.Fl_O           26.78     6.647    533.63    -11.30   0.0000     60.07     6.352    526.77     412.6  0.2554   1.39981   0.0015120     26.74   0.040    0.0015
FS25  Bleed2.Fl_O            24.11     6.647    533.63    -11.30   0.0000     54.06     6.410    528.14     412.6  0.2280   1.39981   0.0015120     24.07   0.036    0.0015
FS3   HPC.Fl_O               22.94    40.498    967.89     94.37   0.0000     11.37    35.639    934.20      49.7  0.4335   1.38244   0.0015120     22.90   0.035    0.0015
FS36  Bleed3.Fl_O            17.78    40.498    967.89     94.37   0.0000      8.81    37.709    948.95      49.3  0.3228   1.38244   0.0015120     17.75   0.027    0.0015
FS4   Burner.Fl_O            17.97    39.565   1698.47     82.11   0.0108     12.08    37.361   1674.31      74.6  0.2943   1.33234   0.0015120     17.75   0.027    0.0147
FS45  HPT.Fl_O               24.02     9.492   1120.65    -20.25   0.0081     54.66     8.598   1091.21     265.4  0.3827   1.36726   0.0015120     23.79   0.036    0.0114
FS49  LPT.Fl_O               24.30     3.259    878.24    -79.54   0.0080    142.56     3.069    863.73     860.2  0.2963   1.38236   0.0015120     24.07   0.036    0.0113
FS5   TEGV.Fl_O              24.30     3.259    878.32    -79.53   0.0080    142.56     3.069    863.80     860.2  0.2963   1.38236   0.0015120     24.07   0.036    0.0113
FS8   Core_Nozz.Fl_O         24.30     3.259    878.39    -79.53   0.0080    142.57     2.854    846.65     613.4  0.4422   1.38235   0.0015120     24.07   0.036    0.0113
FS17  FanDuctLkg.Fl_O       230.57     4.813    475.56    -16.68   0.0000    674.05     4.039    452.29    2606.7  0.5067   1.40071   0.0000295    230.56   0.007    0.0000
FS171 Bleed15.Fl_O          233.24     4.813    476.23    -16.62   0.0000    682.36     3.906    448.59    2481.9  0.5544   1.40070   0.0000465    233.23   0.011    0.0000
FS172 FanDuct.Fl_O          233.24     4.813    476.23    -16.62   0.0000    682.36     3.906    448.59    2481.9  0.5544   1.40070   0.0000465    233.23   0.011    0.0000
FS173 Byp_Nozz.Fl_O         233.24     4.813    476.23    -16.62   0.0000    682.36     2.854    410.06    2006.9  0.8971   1.40070   0.0000465    233.23   0.011    0.0000

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff        Nc        TR    efPoly       pwr       SMN      SMW
Fan       746.40   1.129    0.9053  2563.961    1.0389    0.9069   -1393.0   1639.98    54.90
LPC        86.58   1.559    0.8387  2563.961    1.1613    0.8485    -669.9      6.96     3.70
HPC        54.06   6.093    0.8186  8959.996    1.8138    0.8573   -3516.5     61.17    57.84
HPT        12.08   4.168    0.8742   220.524    1.3658    0.8516    3516.5
LPT        54.66   2.912    0.8512    71.952    1.2742    0.8310    2062.9

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan        867.24   1.126   0.9071   2539.514    0.0413      0.8607    1.0235    0.9980    0.9905
LPC         73.72   1.520   0.7797      0.677    0.0000      1.1742    1.0739    1.0757    0.0003
HPC         49.17   5.853   0.8270   8721.128   10.9874      1.0995    1.0494    0.9898    0.9733
HPT          0.96   4.081   0.8742      1.325    4.0806     12.6299    0.9723    1.0000    0.0003
LPT          0.84   2.438   0.8575      0.809    2.4382     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2539.86	6179.1

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2963	860.21
FanDuct	0.0000	0.5544	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.6213	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9088.3	2032.2	3516.5
LP_Shaft	2408.7	4498.2	2062.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8871	752.52	41.53	9.492
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2820	752.52	41.53	3.259
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	730.76	36.25	14.094
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	865.08	69.01	27.635
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	730.76	36.25	14.094
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	967.89	94.37	40.498
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	730.76	36.25	14.094

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6783	533.63	-11.30	6.647
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.7523	967.89	94.37	39.565
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.4083	967.89	94.37	22.363
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	967.89	94.37	40.498
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	967.89	94.37	40.498
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	967.89	94.37	40.498
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	475.56	-16.68	4.813
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.56	-16.68	4.813
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	475.56	-16.68	4.813
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.56	-16.68	4.813

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1698.40	0.9995	0.0230	0.19223	0.01083

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.142	0.9801	1.0000	0.9800	613.40	0.442	614.9	464.3
Byp_Nozz	1.687	0.9800	1.0000	0.9800	2006.86	0.897	873.1	6329.6

```
**********************************************************************************************************************************
Date:05/13/13    Time:07:06:47    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 26/ 1/10    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 456.81    Stator 1 exit: 463.77    Stator 2 inlet: 472.50    Stator 2 exit: 476.96
            Stator 3 inlet: 485.96    Stator 3 exit: 490.01    Stator 4 inlet: 498.42    Stator 4 exit: 501.85
            Stator 5 inlet: 508.75    Stator 5 exit: 511.73            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.23
Fan Bypass Relative Humidity       1.61
LPC Inlet Relative Humidity        1.44
LPC Exit Relative Humidity         0.13
HPC Relative Humidity              0.01
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          723.11    Fan/LPC Inlet Flow Velocity        180.82
Ambient Static Pressure          2.95    Fan/LPC Inlet Static Pressure        4.11
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   448.84
Additional Water at LPC Exit   0.0012504
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.730	38334.0	18.00	250.36	604.5	1.0913	659.66	8.7106	723.11	9.212	0.763	10.000	1671.6	1580.1	1100.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	250.36	4.201	451.57	-22.43	0.0000	817.10	2.947	407.97	2557.3	0.7300	1.40089	0.0000285	250.35	0.007	0.0000
FS1	Inlet.Fl_O	250.36	4.201	451.57	-22.43	0.0000	817.10	3.848	440.36	4168.2	0.3563	1.40089	0.0000285	250.35	0.007	0.0000
FS12	Splitter.Fl_02	224.57	4.199	451.57	-22.43	0.0000	733.33	3.798	438.76	3531.8	0.3816	1.40089	0.0000285	224.57	0.006	0.0000
FS2	Splitter.Fl_01	25.78	4.199	451.57	-22.43	0.0000	84.19	4.111	448.84	830.5	0.1740	1.40089	0.0000285	25.78	0.001	0.0000
FS14	Fan.Fl_O	224.57	4.708	468.18	-18.45	0.0000	665.97	3.974	446.00	2606.7	0.4981	1.40077	0.0000285	224.57	0.006	0.0000
FS23	LPC.Fl_O	25.78	6.408	520.70	-5.86	0.0000	59.24	6.133	514.19	412.6	0.2514	1.40020	0.0000285	25.78	0.001	0.0000
FS24	VaporIN.Fl_O	25.81	6.408	522.46	-12.64	0.0000	59.42	6.131	515.89	412.6	0.2523	1.40001	0.0012789	25.78	0.033	0.0013
FS25	Bleed2.Fl_O	23.23	6.408	522.46	-12.64	0.0000	53.47	6.185	517.20	412.6	0.2254	1.40001	0.0012789	23.20	0.030	0.0013
FS3	HPC.Fl_O	22.11	38.704	946.04	90.28	0.0000	11.34	34.094	913.28	49.7	0.4316	1.38377	0.0012789	22.08	0.028	0.0013
FS36	Bleed3.Fl_O	17.13	38.704	946.04	90.28	0.0000	8.79	36.056	927.61	49.3	0.3215	1.38377	0.0012789	17.11	0.022	0.0013
FS4	Burner.Fl_O	17.32	37.813	1671.63	78.19	0.0107	12.08	35.705	1647.78	74.6	0.2942	1.33374	0.0012789	17.11	0.022	0.0143
FS45	HPT.Fl_O	23.14	9.186	1104.24	-21.47	0.0080	54.03	8.343	1075.95	265.4	0.3772	1.36842	0.0012789	22.93	0.029	0.0110
FS49	LPT.Fl_O	23.42	3.310	875.72	-77.20	0.0079	135.10	3.137	862.85	860.2	0.2791	1.38259	0.0012789	23.20	0.030	0.0109
FS5	TEGV.Fl_O	23.42	3.310	875.79	-77.20	0.0079	135.10	3.137	862.92	860.2	0.2791	1.38259	0.0012789	23.20	0.030	0.0109
FS8	Core_Nozz.Fl_O	23.42	3.310	875.86	-77.20	0.0079	135.11	2.947	848.12	613.4	0.4131	1.38258	0.0012789	23.20	0.030	0.0109
FS17	FanDuctLkg.Fl_O	224.57	4.708	468.18	-18.45	0.0000	665.97	3.974	446.00	2606.7	0.4981	1.40077	0.0000285	224.57	0.006	0.0000
FS171	Bleed15.Fl_O	227.16	4.708	468.80	-18.38	0.0000	674.07	3.849	442.53	2481.9	0.5442	1.40076	0.0000427	227.15	0.010	0.0000
FS172	FanDuct.Fl_O	227.16	4.708	468.80	-18.38	0.0000	674.07	3.849	442.53	2481.9	0.5442	1.40076	0.0000427	227.15	0.010	0.0000
FS173	Byp_Nozz.Fl_O	227.16	4.708	468.80	-18.38	0.0000	674.07	2.947	409.96	2006.9	0.8461	1.40076	0.0000427	227.15	0.010	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	733.33	1.121	0.9045	2500.478	1.0368	0.9060	-1265.0	2240.58	54.74
LPC	84.19	1.526	0.8394	2500.478	1.1531	0.8487	-604.5	6.76	3.34
HPC	53.47	6.040	0.8178	8941.099	1.8108	0.8565	-3301.0	61.07	57.68
HPT	12.08	4.116	0.8729	219.483	1.3626	0.8503	3301.0		
LPT	54.03	2.775	0.8456	70.211	1.2589	0.8258	1869.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	852.05	1.118	0.9063	2476.637	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	70.97	1.492	0.7767	0.660	0.0000	1.1861	1.0697	1.0806	0.0003
HPC	48.63	5.802	0.8262	8702.736	11.0009	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.030	0.8729	1.319	4.0301	12.6299	0.9723	1.0000	0.0003
LPT	0.83	2.335	0.8519	0.790	2.3352	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2557.30	5626.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2791	860.21
FanDuct	0.0000	0.5442	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7106	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8973.7	1932.0	3301.0
LP_Shaft	2333.1	4208.5	1869.5

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8550	735.85	38.82	9.186
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2718	735.85	38.82	3.310
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	714.62	33.67	13.513
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	845.67	65.58	26.432
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	714.62	33.67	13.513
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	946.04	90.28	38.704
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	714.62	33.67	13.513

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5814	522.46	-12.64	6.408
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6527	946.04	90.28	37.813
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3212	946.04	90.28	21.438
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	946.04	90.28	38.704
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	946.04	90.28	38.704
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	946.04	90.28	38.704
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	468.18	-18.45	4.708
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	468.18	-18.45	4.708
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	468.18	-18.45	4.708
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	468.18	-18.45	4.708

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1671.57	0.9995	0.0230	0.18324	0.01071

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.123	0.9801	1.0000	0.9800	613.40	0.413	574.8	418.3
Byp_Nozz	1.598	0.9800	1.0000	0.9800	2006.86	0.846	823.3	5812.9

```
**********************************************************************************************************************************
Date:05/13/13    Time:07:07:03    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 454.80    Stator 1 exit: 461.58    Stator 2 inlet: 470.09    Stator 2 exit: 474.44
            Stator 3 inlet: 483.21    Stator 3 exit: 487.14    Stator 4 inlet: 495.33    Stator 4 exit: 498.66
            Stator 5 inlet: 505.38    Stator 5 exit: 508.27            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.40
Fan Bypass Relative Humidity       1.75
LPC Inlet Relative Humidity        1.56
LPC Exit Relative Humidity         0.15
HPC Relative Humidity              0.01
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          707.26    Fan/LPC Inlet Flow Velocity        178.30
Ambient Static Pressure          3.09    Fan/LPC Inlet Static Pressure        4.25
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   447.03
Additional Water at LPC Exit   0.0011211
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.714	37357.0	18.00	257.11	619.2	1.0843	671.35	8.7472	707.26	9.095	0.772	10.000	1661.3	1570.1	1093.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	257.11	4.339	449.68	-22.87	0.0000	810.76	3.088	407.97	2561.9	0.7140	1.40090	0.0000272	257.10	0.007	0.0000
FS1	Inlet.Fl_O	257.11	4.339	449.68	-22.87	0.0000	810.76	3.981	438.71	4168.2	0.3531	1.40090	0.0000272	257.10	0.007	0.0000
FS12	Splitter.Fl_02	230.73	4.337	449.68	-22.87	0.0000	727.95	3.929	437.14	3531.8	0.3782	1.40090	0.0000272	230.72	0.006	0.0000
FS2	Splitter.Fl_01	26.38	4.337	449.68	-22.87	0.0000	83.22	4.249	447.03	830.5	0.1720	1.40090	0.0000272	26.38	0.001	0.0000
FS14	Fan.Fl_O	230.73	4.850	465.85	-19.00	0.0000	662.53	4.103	444.08	2606.7	0.4946	1.40079	0.0000272	230.72	0.006	0.0000
FS23	LPC.Fl_O	26.38	6.563	517.05	-6.72	0.0000	58.97	6.284	510.66	412.6	0.2502	1.40025	0.0000272	26.38	0.001	0.0000
FS24	VaporIN.Fl_O	26.41	6.563	518.64	-12.81	0.0000	59.13	6.282	512.19	412.6	0.2510	1.40008	0.0011483	26.38	0.030	0.0011
FS25	Bleed2.Fl_O	23.77	6.563	518.64	-12.81	0.0000	53.21	6.338	513.48	412.6	0.2242	1.40008	0.0011483	23.74	0.027	0.0011
FS3	HPC.Fl_O	22.61	39.464	938.25	89.09	0.0000	11.33	34.774	905.81	49.7	0.4311	1.38425	0.0011483	22.59	0.026	0.0011
FS36	Bleed3.Fl_O	17.53	39.464	938.25	89.09	0.0000	8.78	36.770	919.99	49.3	0.3211	1.38425	0.0011483	17.51	0.020	0.0011
FS4	Burner.Fl_O	17.71	38.555	1661.28	77.08	0.0107	12.08	36.406	1637.53	74.6	0.2942	1.33430	0.0011483	17.51	0.020	0.0141
FS45	HPT.Fl_O	23.67	9.406	1097.90	-21.59	0.0079	53.81	8.551	1070.00	265.4	0.3754	1.36889	0.0011483	23.46	0.027	0.0109
FS49	LPT.Fl_O	23.95	3.450	874.50	-76.00	0.0079	132.48	3.278	862.18	860.2	0.2732	1.38271	0.0011483	23.74	0.027	0.0108
FS5	TEGV.Fl_O	23.95	3.450	874.58	-76.00	0.0079	132.48	3.278	862.25	860.2	0.2732	1.38270	0.0011483	23.74	0.027	0.0108
FS8	Core_Nozz.Fl_O	23.95	3.450	874.65	-76.00	0.0079	132.49	3.088	848.21	613.4	0.4032	1.38270	0.0011483	23.74	0.027	0.0108
FS17	FanDuctLkg.Fl_O	230.73	4.850	465.85	-19.00	0.0000	662.53	4.103	444.08	2606.7	0.4946	1.40079	0.0000272	230.72	0.006	0.0000
FS171	Bleed15.Fl_O	233.37	4.850	466.45	-18.93	0.0000	670.55	3.977	440.69	2481.9	0.5400	1.40078	0.0000399	233.36	0.009	0.0000
FS172	FanDuct.Fl_O	233.37	4.850	466.45	-18.93	0.0000	670.55	3.977	440.69	2481.9	0.5400	1.40078	0.0000399	233.36	0.009	0.0000
FS173	Byp_Nozz.Fl_O	233.37	4.850	466.45	-18.93	0.0000	670.55	3.088	409.92	2006.9	0.8293	1.40078	0.0000399	233.36	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	727.95	1.118	0.9041	2474.843	1.0360	0.9056	-1264.8	2632.78	54.65
LPC	83.22	1.513	0.8396	2474.843	1.1498	0.8487	-602.7	6.68	3.27
HPC	53.21	6.013	0.8173	8932.634	1.8090	0.8561	-3343.3	61.11	57.70
HPT	12.08	4.099	0.8723	219.152	1.3615	0.8497	3343.3		
LPT	53.81	2.726	0.8435	69.546	1.2534	0.8239	1867.6		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	845.80	1.116	0.9060	2451.245	0.0412	0.8607	1.0235	0.9980	0.9905
LPC	69.86	1.480	0.7755	0.654	0.0000	1.1912	1.0688	1.0827	0.0003
HPC	48.40	5.777	0.8258	8694.496	11.0014	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.013	0.8723	1.317	4.0130	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.298	0.8498	0.782	2.2984	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2561.92	5651.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2732	860.21
FanDuct	0.0000	0.5400	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7472	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8932.4	1965.8	3343.3
LP_Shaft	2304.4	4256.6	1867.6

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8746	729.98	38.14	9.406
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2781	729.98	38.14	3.450
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	708.95	33.05	13.802
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	838.78	64.63	26.962
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	708.95	33.05	13.802
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	938.25	89.09	39.464
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	708.95	33.05	13.802

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6407	518.64	-12.81	6.563
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.7136	938.25	89.09	38.555
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3745	938.25	89.09	21.882
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	938.25	89.09	39.464
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	938.25	89.09	39.464
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	938.25	89.09	39.464
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	465.85	-19.00	4.850
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	465.85	-19.00	4.850
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	465.85	-19.00	4.850
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	465.85	-19.00	4.850

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1661.22	0.9995	0.0230	0.18649	0.01065

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.117	0.9801	1.0000	0.9800	613.40	0.403	561.1	417.7
Byp_Nozz	1.570	0.9800	1.0000	0.9800	2006.86	0.829	807.0	5853.3

```
**********************************************************************************************************************************
Date:05/13/13    Time:07:07:18    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 10/ 24/ 1/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 456.45    Stator 1 exit: 462.82    Stator 2 inlet: 470.81    Stator 2 exit: 474.87
            Stator 3 inlet: 483.09    Stator 3 exit: 486.75    Stator 4 inlet: 494.44    Stator 4 exit: 497.52
            Stator 5 inlet: 503.81    Stator 5 exit: 506.47            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.00
Fan Bypass Relative Humidity       2.26
LPC Inlet Relative Humidity        2.00
LPC Exit Relative Humidity         0.22
HPC Relative Humidity              0.01
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          667.90    Fan/LPC Inlet Flow Velocity        172.72
Ambient Static Pressure          3.58    Fan/LPC Inlet Static Pressure        4.74
Ambient Static Temperature     414.42    Fan/LPC Inlet Static Temperature   449.12
Additional Water at LPC Exit   0.0010079
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.669	34281.0	18.00	278.63	674.3	1.0687	720.58	8.8272	667.90	8.760	0.795	10.000	1654.1	1562.9	1091.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	278.63	4.831	451.61	-22.45	0.0000	790.90	3.578	414.42	2577.9	0.6690	1.40088	0.0000348	278.62	0.010	0.0000
FS1	Inlet.Fl_O	278.63	4.831	451.61	-22.45	0.0000	790.90	4.453	441.20	4168.2	0.3430	1.40088	0.0000348	278.62	0.010	0.0000
FS12	Splitter.Fl_02	250.28	4.829	451.61	-22.45	0.0000	710.78	4.398	439.70	3531.8	0.3676	1.40088	0.0000348	250.27	0.009	0.0000
FS2	Splitter.Fl_01	28.35	4.829	451.61	-22.45	0.0000	80.52	4.736	449.12	830.5	0.1662	1.40088	0.0000348	28.35	0.001	0.0000
FS14	Fan.Fl_O	250.28	5.362	466.82	-18.81	0.0000	650.77	4.572	446.01	2606.7	0.4825	1.40078	0.0000348	250.27	0.009	0.0000
FS23	LPC.Fl_O	28.35	7.127	514.90	-7.28	0.0000	58.25	6.832	508.70	412.6	0.2469	1.40028	0.0000348	28.35	0.001	0.0000
FS24	VaporIN.Fl_O	28.38	7.127	516.34	-12.75	0.0000	58.39	6.830	510.08	412.6	0.2476	1.40012	0.0010427	28.35	0.030	0.0010
FS25	Bleed2.Fl_O	25.54	7.127	516.34	-12.75	0.0000	52.55	6.889	511.33	412.6	0.2212	1.40012	0.0010427	25.52	0.027	0.0010
FS3	HPC.Fl_O	24.30	42.320	931.18	87.94	0.0000	11.31	37.308	899.09	49.7	0.4301	1.38467	0.0010427	24.28	0.025	0.0010
FS36	Bleed3.Fl_O	18.84	42.320	931.18	87.94	0.0000	8.76	39.440	913.11	49.3	0.3205	1.38467	0.0010427	18.82	0.020	0.0010
FS4	Burner.Fl_O	19.04	41.345	1654.14	75.96	0.0106	12.08	39.040	1630.46	74.6	0.2941	1.33467	0.0010427	18.82	0.020	0.0140
FS45	HPT.Fl_O	25.44	10.196	1095.08	-21.51	0.0079	53.29	9.289	1067.87	265.4	0.3710	1.36909	0.0010427	25.22	0.026	0.0107
FS49	LPT.Fl_O	25.74	3.942	883.50	-72.98	0.0078	125.26	3.767	872.47	860.2	0.2570	1.38222	0.0010427	25.52	0.027	0.0106
FS5	TEGV.Fl_O	25.74	3.942	883.57	-72.98	0.0078	125.27	3.767	872.54	860.2	0.2570	1.38222	0.0010427	25.52	0.027	0.0106
FS8	Core_Nozz.Fl_O	25.74	3.942	883.64	-72.98	0.0078	125.27	3.578	860.25	613.4	0.3768	1.38222	0.0010427	25.52	0.027	0.0106
FS17	FanDuctLkg.Fl_O	250.28	5.362	466.82	-18.81	0.0000	650.77	4.572	446.01	2606.7	0.4825	1.40078	0.0000348	250.27	0.009	0.0000
FS171	Bleed15.Fl_O	253.12	5.362	467.38	-18.74	0.0000	658.54	4.441	442.84	2481.9	0.5258	1.40077	0.0000461	253.11	0.012	0.0000
FS172	FanDuct.Fl_O	253.12	5.362	467.38	-18.74	0.0000	658.54	4.441	442.84	2481.9	0.5258	1.40077	0.0000461	253.11	0.012	0.0000
FS173	Byp_Nozz.Fl_O	253.12	5.362	467.38	-18.74	0.0000	658.54	3.578	416.28	2006.9	0.7824	1.40077	0.0000461	253.11	0.012	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	710.78	1.110	0.9033	2398.017	1.0337	0.9047	-1290.9	5592.06	54.18
LPC	80.52	1.476	0.8406	2398.017	1.1402	0.8491	-608.6	6.41	3.05
HPC	52.55	5.938	0.8161	8910.844	1.8034	0.8549	-3550.9	61.40	57.91
HPT	12.08	4.055	0.8718	218.602	1.3584	0.8493	3550.9		
LPT	53.29	2.586	0.8389	67.618	1.2372	0.8199	1899.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	825.85	1.108	0.9051	2375.152	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	66.54	1.446	0.7719	0.633	0.0000	1.2101	1.0675	1.0890	0.0003
HPC	47.79	5.705	0.8245	8673.287	10.9923	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.971	0.8718	1.314	3.9705	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.193	0.8452	0.761	2.1932	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2577.91	5784.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2570	860.21
FanDuct	0.0000	0.5258	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8272	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8890.8	2097.7	3550.9
LP_Shaft	2237.6	4458.5	1899.5

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9400	725.24	37.60	10.196
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2989	725.24	37.60	3.942
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	704.45	32.56	14.870
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	832.81	63.78	28.947
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	704.45	32.56	14.870
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	931.18	87.94	42.320
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	704.45	32.56	14.870

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.8382	516.34	-12.75	7.127
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.9166	931.18	87.94	41.345
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.5521	931.18	87.94	23.528
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	931.18	87.94	42.320
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	931.18	87.94	42.320
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	931.18	87.94	42.320
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	466.82	-18.81	5.362
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	466.82	-18.81	5.362
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	466.82	-18.81	5.362
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	466.82	-18.81	5.362

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1654.07	0.9995	0.0230	0.20016	0.01064

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.102	0.9801	1.0000	0.9800	613.40	0.377	527.9	422.4
Byp_Nozz	1.499	0.9800	1.0000	0.9800	2006.86	0.782	767.2	6036.0

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**********************************************************************************************************************************
Date:05/13/13    Time:07:07:44    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 15/ 43/ 2/12    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 465.08    Stator 1 exit: 470.61    Stator 2 inlet: 477.45    Stator 2 exit: 480.75
            Stator 3 inlet: 487.89    Stator 3 exit: 490.80    Stator 4 inlet: 497.51    Stator 4 exit: 499.91
            Stator 5 inlet: 505.31    Stator 5 exit: 507.35            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.96
Fan Bypass Relative Humidity       3.11
LPC Inlet Relative Humidity        2.83
LPC Exit Relative Humidity         0.47
HPC Relative Humidity              0.02
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          617.99    Fan/LPC Inlet Flow Velocity        174.69
Ambient Static Pressure          4.36    Fan/LPC Inlet Static Pressure        5.49
Ambient Static Temperature     429.58    Fan/LPC Inlet Static Temperature   458.87
Additional Water at LPC Exit   0.0010284
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.608	30029.0	18.00	305.17	734.1	1.0714	786.52	8.3887	617.99	8.201	0.828	10.000	1658.5	1566.7	1096.5

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	305.17	5.595	461.42	-20.30	0.0000	756.00	4.358	429.58	2596.8	0.6080	1.40081	0.0000681	305.15	0.021	0.0001
FS1	Inlet.Fl_O	305.17	5.595	461.42	-20.30	0.0000	756.00	5.199	451.81	4168.2	0.3257	1.40081	0.0000681	305.15	0.021	0.0001
FS12	Splitter.Fl_02	272.66	5.592	461.42	-20.30	0.0000	675.82	5.147	450.58	3531.8	0.3464	1.40081	0.0000681	272.64	0.019	0.0001
FS2	Splitter.Fl_01	32.50	5.592	461.42	-20.30	0.0000	80.56	5.485	458.87	830.5	0.1663	1.40081	0.0000681	32.50	0.002	0.0001
FS14	Fan.Fl_O	272.66	6.141	475.29	-16.97	0.0000	624.63	5.322	456.22	2606.7	0.4567	1.40070	0.0000681	272.64	0.019	0.0001
FS23	LPC.Fl_O	32.50	7.833	516.04	-7.20	0.0000	60.83	7.477	509.22	412.6	0.2587	1.40026	0.0000681	32.50	0.002	0.0001
FS24	VaporIN.Fl_O	32.54	7.833	517.50	-12.78	0.0000	60.98	7.475	510.62	412.6	0.2595	1.40010	0.0010965	32.50	0.036	0.0011
FS25	Bleed2.Fl_O	27.66	7.833	517.50	-12.78	0.0000	51.83	7.578	512.63	412.6	0.2180	1.40010	0.0010965	27.63	0.030	0.0011
FS3	HPC.Fl_O	26.32	45.884	929.98	87.34	0.0000	11.29	40.476	898.09	49.7	0.4290	1.38473	0.0010965	26.29	0.029	0.0011
FS36	Bleed3.Fl_O	20.39	45.884	929.98	87.34	0.0000	8.75	42.775	912.02	49.3	0.3197	1.38473	0.0010965	20.37	0.022	0.0011
FS4	Burner.Fl_O	20.61	44.827	1658.51	75.27	0.0107	12.08	42.328	1634.78	74.6	0.2942	1.33439	0.0010965	20.37	0.022	0.0142
FS45	HPT.Fl_O	27.55	11.207	1100.65	-21.61	0.0080	52.63	10.237	1074.10	265.4	0.3656	1.36868	0.0010965	27.30	0.030	0.0109
FS49	LPT.Fl_O	27.87	4.717	906.68	-68.72	0.0079	114.81	4.543	897.30	860.2	0.2342	1.38084	0.0010965	27.63	0.030	0.0108
FS5	TEGV.Fl_O	27.87	4.717	906.75	-68.72	0.0079	114.82	4.543	897.37	860.2	0.2342	1.38084	0.0010965	27.63	0.030	0.0108
FS8	Core_Nozz.Fl_O	27.87	4.717	906.82	-68.72	0.0079	114.82	4.358	887.22	613.4	0.3403	1.38083	0.0010965	27.63	0.030	0.0108
FS17	FanDuctLkg.Fl_O	272.66	6.141	475.29	-16.97	0.0000	624.63	5.322	456.22	2606.7	0.4567	1.40070	0.0000681	272.64	0.019	0.0001
FS171	Bleed15.Fl_O	277.54	6.141	476.04	-16.90	0.0000	636.31	5.174	453.27	2481.9	0.5006	1.40069	0.0000862	277.52	0.024	0.0001
FS172	FanDuct.Fl_O	277.54	6.141	476.04	-16.90	0.0000	636.31	5.174	453.27	2481.9	0.5006	1.40069	0.0000862	277.52	0.024	0.0001
FS173	Byp_Nozz.Fl_O	277.54	6.141	476.04	-16.90	0.0000	636.31	4.358	431.55	2006.9	0.7172	1.40069	0.0000862	277.52	0.024	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	675.82	1.098	0.9022	2251.763	1.0301	0.9035	-1282.9	-9545.82	52.70
LPC	80.56	1.401	0.8545	2251.763	1.1184	0.8613	-602.2	5.95	2.63
HPC	51.83	5.858	0.8146	8887.267	1.7971	0.8535	-3822.9	61.67	58.09
HPT	12.08	4.000	0.8720	217.982	1.3542	0.8497	3822.9		
LPT	52.63	2.376	0.8307	64.018	1.2114	0.8129	1885.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	785.23	1.096	0.9041	2230.293	0.0416	0.8607	1.0235	0.9980	0.9905
LPC	60.40	1.383	0.7655	0.595	0.0000	1.3338	1.0471	1.1162	0.0003
HPC	47.14	5.629	0.8231	8650.338	10.9851	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.917	0.8720	1.310	3.9168	12.6299	0.9723	1.0000	0.0003
LPT	0.81	2.035	0.8369	0.720	2.0347	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2596.78	5861.6
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2342	860.21
FanDuct	0.0000	0.5006	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.3887	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8877.3	2261.7	3822.9
LP_Shaft	2123.9	4661.9	1885.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0178	725.21	37.28	11.207
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3236	725.21	37.28	4.717
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	704.54	32.27	16.204
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	832.17	63.31	31.424
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	704.54	32.27	16.204
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	929.98	87.34	45.884
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	704.54	32.27	16.204

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1500	1.0000	1.0000	4.8805	517.50	-12.78	7.833
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.1578	929.98	87.34	44.827
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.7632	929.98	87.34	25.596
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	929.98	87.34	45.884
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	929.98	87.34	45.884
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	929.98	87.34	45.884
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	475.29	-16.97	6.141
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.29	-16.97	6.141
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	475.29	-16.97	6.141
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.29	-16.97	6.141

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1658.44	0.9995	0.0230	0.21848	0.01072

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.082	0.9801	1.0000	0.9800	613.40	0.340	484.0	419.3
Byp_Nozz	1.409	0.9800	1.0000	0.9800	2006.86	0.717	716.0	6176.4

```
**********************************************************************************************************************************
Date:05/13/13    Time:07:08:15    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 23/ 51/ 2/20    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 473.14    Stator 1 exit: 477.22    Stator 2 inlet: 481.84    Stator 2 exit: 483.66
            Stator 3 inlet: 488.81    Stator 3 exit: 490.22    Stator 4 inlet: 495.16    Stator 4 exit: 496.17
            Stator 5 inlet: 499.77    Stator 5 exit: 500.50            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.82
Fan Bypass Relative Humidity       3.94
LPC Inlet Relative Humidity        3.82
LPC Exit Relative Humidity         1.19
HPC Relative Humidity              0.02
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          571.13    Fan/LPC Inlet Flow Velocity        194.31
Ambient Static Pressure          5.30    Fan/LPC Inlet Static Pressure        6.36
Ambient Static Temperature     445.14    Fan/LPC Inlet Static Temperature   469.18
Additional Water at LPC Exit   0.0009281
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.552	25666.0	18.00	330.61	753.5	1.1140	839.45	7.0610	571.13	7.339	0.859	10.000	1668.8	1574.6	1107.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	330.61	6.516	472.33	-18.03	0.0000	711.54	5.297	445.14	2595.6	0.5520	1.40072	0.0001274	330.57	0.042	0.0001
FS1	Inlet.Fl_O	330.61	6.516	472.33	-18.03	0.0000	711.54	6.111	463.73	4168.2	0.3041	1.40072	0.0001274	330.57	0.042	0.0001
FS12	Splitter.Fl_02	289.60	6.513	472.33	-18.03	0.0000	623.58	6.077	463.07	3531.8	0.3159	1.40072	0.0001274	289.56	0.037	0.0001
FS2	Splitter.Fl_01	41.01	6.513	472.33	-18.03	0.0000	88.31	6.363	469.18	830.5	0.1829	1.40072	0.0001274	41.01	0.005	0.0001
FS14	Fan.Fl_O	289.60	7.058	484.50	-15.11	0.0000	582.75	6.259	468.12	2606.7	0.4178	1.40061	0.0001274	289.56	0.037	0.0001
FS23	LPC.Fl_O	41.01	8.214	511.73	-8.58	0.0000	72.88	7.665	501.70	412.6	0.3161	1.40031	0.0001274	41.01	0.005	0.0001
FS24	VaporIN.Fl_O	41.05	8.214	513.06	-13.61	0.0000	73.05	7.662	502.95	412.6	0.3170	1.40016	0.0010555	41.01	0.043	0.0011
FS25	Bleed2.Fl_O	28.74	8.214	513.06	-13.61	0.0000	51.13	7.954	508.36	412.6	0.2149	1.40016	0.0010555	28.71	0.030	0.0011
FS3	HPC.Fl_O	27.34	47.823	920.81	85.31	0.0000	11.20	42.292	889.82	49.7	0.4246	1.38527	0.0010555	27.31	0.029	0.0011
FS36	Bleed3.Fl_O	21.19	47.823	920.81	85.31	0.0000	8.68	44.640	903.32	49.3	0.3168	1.38527	0.0010555	21.17	0.022	0.0011
FS4	Burner.Fl_O	21.42	46.722	1668.79	72.94	0.0110	12.09	44.115	1644.95	74.6	0.2943	1.33370	0.0010555	21.17	0.022	0.0145
FS45	HPT.Fl_O	28.63	12.036	1111.68	-22.65	0.0082	51.18	11.057	1086.57	265.4	0.3540	1.36781	0.0010555	28.37	0.030	0.0111
FS49	LPT.Fl_O	28.97	5.627	938.91	-64.51	0.0081	101.80	5.465	931.39	860.2	0.2063	1.37879	0.0010555	28.71	0.030	0.0110
FS5	TEGV.Fl_O	28.97	5.627	938.98	-64.51	0.0081	101.80	5.465	931.47	860.2	0.2063	1.37879	0.0010555	28.71	0.030	0.0110
FS8	Core_Nozz.Fl_O	28.97	5.627	939.05	-64.51	0.0081	101.81	5.297	923.58	613.4	0.2971	1.37878	0.0010555	28.71	0.030	0.0110
FS17	FanDuctLkg.Fl_O	289.60	7.058	484.50	-15.11	0.0000	582.75	6.259	468.12	2606.7	0.4178	1.40061	0.0001274	289.56	0.037	0.0001
FS171	Bleed15.Fl_O	301.92	7.058	485.66	-15.05	0.0000	608.26	6.064	465.02	2481.9	0.4707	1.40060	0.0001652	301.87	0.050	0.0002
FS172	FanDuct.Fl_O	301.92	7.058	485.66	-15.05	0.0000	608.26	6.064	465.02	2481.9	0.4707	1.40060	0.0001652	301.87	0.050	0.0002
FS173	Byp_Nozz.Fl_O	301.92	7.058	485.66	-15.05	0.0000	608.26	5.297	447.36	2006.9	0.6536	1.40060	0.0001652	301.87	0.050	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	623.58	1.084	0.9033	2046.616	1.0258	0.9044	-1195.3	-2784.52	49.87
LPC	88.31	1.261	0.8225	2046.616	1.0834	0.8283	-548.3	6.38	2.41
HPC	51.13	5.822	0.8139	8865.532	1.7948	0.8528	-3924.5	60.78	57.16
HPT	12.09	3.882	0.8734	215.845	1.3455	0.8519	3924.5		
LPT	51.18	2.139	0.8214	58.576	1.1811	0.8051	1743.6		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	724.54	1.082	0.9051	2027.101	0.0425	0.8607	1.0235	0.9980	0.9905
LPC	53.54	1.312	0.7608	0.541	0.0000	1.6496	0.8378	1.0812	0.0003
HPC	46.50	5.595	0.8223	8629.182	11.0483	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.802	0.8734	1.297	3.8020	12.6299	0.9723	1.0000	0.0003
LPT	0.78	1.857	0.8275	0.659	1.8567	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2595.59	5868.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2063	860.21
FanDuct	0.0000	0.4707	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.0610	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8817.5	2337.7	3924.5
LP_Shaft	1953.0	4688.8	1743.6

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0575	718.34	35.85	12.036
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3362	718.34	35.85	5.627
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	697.91	30.90	16.928
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	824.09	61.57	32.772
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	697.91	30.90	16.928
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	920.81	85.31	47.823
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	697.91	30.90	16.928

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.3000	1.0000	1.0000	12.3156	513.06	-13.61	8.214
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.2811	920.81	85.31	46.722
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.8711	920.81	85.31	26.882
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	920.81	85.31	47.823
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	920.81	85.31	47.823
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	920.81	85.31	47.823
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	484.50	-15.11	7.058
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	484.50	-15.11	7.058
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	484.50	-15.11	7.058
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	484.50	-15.11	7.058

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1668.72	0.9995	0.0230	0.23318	0.01102

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.062	0.9801	1.0000	0.9800	613.40	0.297	430.8	387.9
Byp_Nozz	1.333	0.9800	1.0000	0.9800	2006.86	0.654	664.4	6234.5

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**********************************************************************************************************************************
Date:05/13/13    Time:07:08:46    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 26/ 54/ 2/23    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 486.29    Stator 1 exit: 489.25    Stator 2 inlet: 492.01    Stator 2 exit: 492.78
            Stator 3 inlet: 496.12    Stator 3 exit: 496.46    Stator 4 inlet: 499.72    Stator 4 exit: 499.76
            Stator 5 inlet: 501.62    Stator 5 exit: 501.46            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.85
Fan Bypass Relative Humidity       4.91
LPC Inlet Relative Humidity        5.02
LPC Exit Relative Humidity         2.61
HPC Relative Humidity              0.02
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          518.26    Fan/LPC Inlet Flow Velocity        204.13
Ambient Static Pressure          6.74    Fan/LPC Inlet Static Pressure        7.74
Ambient Static Temperature     465.18    Fan/LPC Inlet Static Temperature   484.08
Additional Water at LPC Exit   0.0009833
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.490	20047.0	18.00	368.24	837.7	1.1161	934.98	6.2459	518.26	6.460	0.890	10.000	1701.9	1603.8	1138.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	368.24	7.943	487.56	-15.16	0.0000	660.53	6.740	465.18	2616.6	0.4900	1.40057	0.0002627	368.14	0.097	0.0003
FS1	Inlet.Fl_O	368.24	7.943	487.56	-15.16	0.0000	660.53	7.522	480.02	4168.2	0.2800	1.40057	0.0002627	368.14	0.097	0.0003
FS12	Splitter.Fl_02	317.42	7.939	487.56	-15.16	0.0000	569.66	7.502	479.72	3531.8	0.2855	1.40057	0.0002627	317.33	0.083	0.0003
FS2	Splitter.Fl_01	50.82	7.939	487.56	-15.16	0.0000	91.21	7.743	484.08	830.5	0.1892	1.40057	0.0002627	50.81	0.013	0.0003
FS14	Fan.Fl_O	317.42	8.514	498.42	-12.55	0.0000	537.10	7.713	484.55	2606.7	0.3781	1.40045	0.0002627	317.33	0.083	0.0003
FS23	LPC.Fl_O	50.82	9.087	515.32	-8.50	0.0000	81.92	8.301	502.16	412.6	0.3618	1.40024	0.0002627	50.81	0.013	0.0003
FS24	VaporIN.Fl_O	50.87	9.087	516.72	-13.83	0.0000	82.11	8.297	503.45	412.6	0.3629	1.40009	0.0012460	50.81	0.063	0.0012
FS25	Bleed2.Fl_O	30.52	9.087	516.72	-13.83	0.0000	49.27	8.821	512.34	412.6	0.2066	1.40009	0.0012460	30.48	0.038	0.0012
FS3	HPC.Fl_O	29.04	51.310	920.26	84.09	0.0000	11.08	45.517	890.05	49.7	0.4191	1.38528	0.0012460	29.01	0.036	0.0012
FS36	Bleed3.Fl_O	22.51	51.310	920.26	84.09	0.0000	8.59	47.970	903.18	49.3	0.3131	1.38528	0.0012460	22.48	0.028	0.0012
FS4	Burner.Fl_O	22.77	50.129	1701.92	71.14	0.0116	12.09	47.330	1677.69	74.6	0.2947	1.33172	0.0012460	22.48	0.028	0.0153
FS45	HPT.Fl_O	30.42	13.561	1142.72	-23.26	0.0086	48.94	12.562	1119.52	265.4	0.3364	1.36550	0.0012460	30.13	0.038	0.0118
FS49	LPT.Fl_O	30.78	7.048	989.02	-60.45	0.0085	88.63	6.895	983.12	860.2	0.1787	1.37544	0.0012460	30.48	0.038	0.0117
FS5	TEGV.Fl_O	30.78	7.048	989.09	-60.45	0.0085	88.63	6.895	983.19	860.2	0.1787	1.37544	0.0012460	30.48	0.038	0.0117
FS8	Core_Nozz.Fl_O	30.78	7.048	989.16	-60.45	0.0085	88.64	6.740	977.17	613.5	0.2555	1.37543	0.0012460	30.48	0.038	0.0117
FS17	FanDuctLkg.Fl_O	317.42	8.514	498.42	-12.55	0.0000	537.10	7.713	484.55	2606.7	0.3781	1.40045	0.0002627	317.33	0.083	0.0003
FS171	Bleed15.Fl_O	337.77	8.514	499.53	-12.63	0.0000	572.16	7.478	481.33	2481.9	0.4345	1.40043	0.0003219	337.66	0.109	0.0003
FS172	FanDuct.Fl_O	337.77	8.514	499.53	-12.63	0.0000	572.16	7.478	481.33	2481.9	0.4345	1.40043	0.0003219	337.66	0.109	0.0003
FS173	Byp_Nozz.Fl_O	337.77	8.514	499.53	-12.63	0.0000	572.16	6.740	467.24	2006.9	0.5873	1.40043	0.0003219	337.66	0.109	0.0003

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	569.66	1.072	0.9055	1850.759	1.0223	0.9064	-1170.2	-1884.98	46.41
LPC	91.21	1.145	0.6913	1850.759	1.0569	0.6972	-478.8	6.96	2.20
HPC	49.27	5.646	0.8099	8805.262	1.7810	0.8491	-4126.3	60.59	56.76
HPT	12.09	3.697	0.8755	213.036	1.3307	0.8552	4126.2		
LPT	48.94	1.924	0.8145	53.082	1.1521	0.8002	1649.1		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	661.89	1.071	0.9073	1833.113	0.0439	0.8607	1.0235	0.9980	0.9905
LPC	47.10	1.248	0.7559	0.489	0.0000	1.9364	0.5839	0.9146	0.0003
HPC	44.81	5.427	0.8183	8570.520	11.0857	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.622	0.8755	1.280	3.6218	12.6299	0.9723	1.0000	0.0003
LPT	0.75	1.695	0.8205	0.597	1.6951	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2616.64	5931.6

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1787	860.21
FanDuct	0.0000	0.4345	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.2459	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8788.7	2465.8	4126.2
LP_Shaft	1794.4	4826.8	1649.1

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.1232	719.87	35.13	13.561
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3571	719.87	35.13	7.048
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	699.65	30.23	18.376
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	824.52	60.59	35.266
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	699.65	30.23	18.376
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	920.26	84.09	51.310
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	699.65	30.23	18.376

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	20.3481	516.72	-13.83	9.087
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.4850	920.26	84.09	50.129
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	3.0495	920.26	84.09	29.212
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	920.26	84.09	51.310
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	920.26	84.09	51.310
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	920.26	84.09	51.310
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	498.42	-12.55	8.514
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	498.42	-12.55	8.514
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	498.42	-12.55	8.514
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	498.42	-12.55	8.514

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1701.86	0.9995	0.0230	0.25972	0.01155

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.046	0.9801	1.0000	0.9800	613.40	0.256	380.6	364.1
Byp_Nozz	1.263	0.9800	1.0000	0.9800	2006.86	0.587	610.1	6405.2

```
**********************************************************************************************************************************
Date:05/13/13    Time:07:09:18    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 30/ 58/ 2/27    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 500.30    Stator 1 exit: 502.66    Stator 2 inlet: 504.99    Stator 2 exit: 505.72
            Stator 3 inlet: 508.44    Stator 3 exit: 508.85    Stator 4 inlet: 511.46    Stator 4 exit: 511.64
            Stator 5 inlet: 513.24    Stator 5 exit: 513.26            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         6.53
Fan Bypass Relative Humidity       5.96
LPC Inlet Relative Humidity        5.71
LPC Exit Relative Humidity         3.38
HPC Relative Humidity              0.04
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity           479.99    Fan/LPC Inlet Flow Velocity        173.25
Ambient Static Pressure           8.15    Fan/LPC Inlet Static Pressure        9.18
Ambient Static Temperature      481.63    Fan/LPC Inlet Static Temperature   498.31
Additional Water at LPC Exit    0.0012964
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.446	15435.0	18.00	386.83	648.6	1.3675	886.97	6.7923	479.99	5.294	0.902	10.000	1654.1	1558.1	1128.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	386.83	9.342	500.81	-13.05	0.0000	597.95	8.149	481.63	2541.8	0.4460	1.40040	0.0004484	386.65	0.173	0.0004
FS1	Inlet.Fl_O	386.83	9.342	500.81	-13.05	0.0000	597.95	8.941	494.56	4168.2	0.2512	1.40040	0.0004484	386.65	0.173	0.0004
FS12	Splitter.Fl_02	337.18	9.337	500.81	-13.05	0.0000	521.48	8.911	494.16	3531.8	0.2592	1.40040	0.0004484	337.03	0.151	0.0004
FS2	Splitter.Fl_01	49.64	9.337	500.81	-13.05	0.0000	76.77	9.175	498.31	830.5	0.1583	1.40040	0.0004484	49.62	0.022	0.0004
FS14	Fan.Fl_O	337.18	9.816	508.83	-11.13	0.0000	500.02	9.029	496.81	2606.7	0.3475	1.40030	0.0004484	337.03	0.151	0.0004
FS23	LPC.Fl_O	49.64	10.441	523.31	-7.65	0.0000	70.18	9.797	513.87	412.6	0.3030	1.40011	0.0004484	49.62	0.022	0.0004
FS24	VaporIN.Fl_O	49.71	10.441	525.12	-14.69	0.0000	70.39	9.792	515.58	412.6	0.3041	1.39991	0.0017448	49.62	0.087	0.0017
FS25	Bleed2.Fl_O	29.82	10.441	525.12	-14.69	0.0000	42.24	10.218	521.89	412.6	0.1760	1.39991	0.0017448	29.77	0.052	0.0017
FS3	HPC.Fl_O	28.38	49.459	890.59	73.96	0.0000	11.05	43.910	861.48	49.7	0.4175	1.38687	0.0017448	28.33	0.049	0.0017
FS36	Bleed3.Fl_O	21.99	49.459	890.59	73.96	0.0000	8.56	46.258	874.11	49.3	0.3120	1.38687	0.0017448	21.95	0.038	0.0017
FS4	Burner.Fl_O	22.24	48.320	1654.07	61.48	0.0112	12.08	45.628	1630.44	74.6	0.2941	1.33416	0.0017448	21.95	0.038	0.0154
FS45	HPT.Fl_O	29.72	14.283	1133.11	-23.80	0.0084	45.20	13.397	1113.81	265.4	0.3073	1.36622	0.0017448	29.42	0.051	0.0120
FS49	LPT.Fl_O	30.07	8.397	1008.63	-53.65	0.0083	73.39	8.273	1004.55	860.2	0.1472	1.37429	0.0017448	29.77	0.052	0.0118
FS5	TEGV.Fl_O	30.07	8.397	1008.70	-53.65	0.0083	73.39	8.273	1004.63	860.2	0.1472	1.37429	0.0017448	29.77	0.052	0.0118
FS8	Core_Nozz.Fl_O	30.07	8.397	1008.77	-53.65	0.0083	73.40	8.149	1000.57	613.4	0.2091	1.37428	0.0017448	29.77	0.052	0.0119
FS17	FanDuctLkg.Fl_O	337.18	9.816	508.83	-11.13	0.0000	500.02	9.029	496.81	2606.7	0.3475	1.40030	0.0004484	337.03	0.151	0.0004
FS171	Bleed15.Fl_O	357.07	9.816	509.73	-11.33	0.0000	529.98	8.815	494.30	2481.9	0.3949	1.40028	0.0005205	356.88	0.186	0.0005
FS172	FanDuct.Fl_O	357.07	9.816	509.73	-11.33	0.0000	529.98	8.815	494.30	2481.9	0.3949	1.40028	0.0005205	356.88	0.186	0.0005
FS173	Byp_Nozz.Fl_O	357.07	9.816	509.73	-11.33	0.0000	529.98	8.149	483.33	2006.9	0.5224	1.40028	0.0005205	356.88	0.186	0.0005

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	521.48	1.051	0.8987	1612.378	1.0160	0.8994	-917.2	-1524.62	44.72
LPC	76.77	1.118	0.7226	1612.378	1.0449	0.7270	-379.1	8.25	1.96
HPC	42.24	4.737	0.7956	8541.451	1.6960	0.8340	-3649.6	68.30	63.08
HPT	12.08	3.383	0.8669	211.319	1.3031	0.8470	3649.6		
LPT	45.20	1.701	0.8009	47.068	1.1199	0.7886	1296.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	605.90	1.050	0.9005	1597.004	0.0442	0.8607	1.0235	0.9980	0.9905
LPC	39.77	1.185	0.7481	0.426	0.0000	1.9307	0.6395	0.9659	0.0003
HPC	38.41	4.561	0.8038	8313.741	10.7568	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.317	0.8669	1.270	3.3171	12.6299	0.9723	1.0000	0.0003
LPT	0.69	1.527	0.8069	0.529	1.5272	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2541.80	5770.9
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1472	860.21
FanDuct	0.0000	0.3949	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.7923	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8594.4	2230.3	3649.6
LP_Shaft	1584.4	4296.9	1296.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0975	708.95	29.64	14.283
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3489	708.95	29.64	8.397
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	690.65	25.20	19.025
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	803.76	52.68	34.632
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	690.65	25.20	19.025
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	890.59	73.96	49.459
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	690.65	25.20	19.025

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	19.8826	525.12	-14.69	10.441
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.4053	890.59	73.96	48.320
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.9797	890.59	73.96	28.851
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	890.59	73.96	49.459
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	890.59	73.96	49.459
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	890.59	73.96	49.459
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	508.83	-11.13	9.816
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	508.83	-11.13	9.816
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	508.83	-11.13	9.816
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	508.83	-11.13	9.816

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1654.01	0.9995	0.0230	0.24638	0.01122

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.030	0.9801	1.0000	0.9800	613.40	0.209	315.0	294.4
Byp_Nozz	1.204	0.9800	1.0000	0.9800	2006.86	0.522	551.9	6125.0

10μm, ISA +36R

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**********************************************************************************************************************************
Date:05/13/13    Time:07:26:11    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 483.77    Stator 1 exit: 491.58    Stator 2 inlet: 501.39    Stator 2 exit: 506.41
            Stator 3 inlet: 516.53    Stator 3 exit: 521.10    Stator 4 inlet: 530.55    Stator 4 exit: 534.44
            Stator 5 inlet: 542.19    Stator 5 exit: 545.58            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.97
Fan Bypass Relative Humidity       1.40
LPC Inlet Relative Humidity        1.30
LPC Exit Relative Humidity         0.13
HPC Relative Humidity              0.02
Drop Diameter                 0.0000100    Inlet Length                        40.00
Ambient Flow Velocity            789.49    Fan/LPC Inlet Flow Velocity        192.08
Ambient Static Pressure            2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature       425.97    Fan/LPC Inlet Static Temperature   474.85
Additional Water at LPC Exit     0.0024853
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	252.23	628.1	1.1314	710.62	8.6079	789.49	9.522	0.736	10.000	1767.7	1672.6	1164.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	252.23	4.267	477.92	-16.44	0.0000	833.95	2.854	425.97	2544.2	0.7800	1.40068	0.0000851	252.21	0.021	0.0001
FS1	Inlet.Fl_O	252.23	4.267	477.92	-16.44	0.0000	833.95	3.891	465.49	4168.2	0.3651	1.40068	0.0000851	252.21	0.021	0.0001
FS12	Splitter.Fl_02	225.98	4.265	477.92	-16.44	0.0000	747.52	3.839	463.75	3531.8	0.3906	1.40068	0.0000851	225.96	0.019	0.0001
FS2	Splitter.Fl_01	26.25	4.265	477.92	-16.44	0.0000	86.84	4.169	474.85	830.5	0.1798	1.40068	0.0000851	26.25	0.002	0.0001
FS14	Fan.Fl_O	225.98	4.821	496.75	-11.93	0.0000	674.16	4.045	472.44	2606.7	0.5068	1.40049	0.0000851	225.96	0.019	0.0001
FS23	LPC.Fl_O	26.25	6.667	555.57	2.19	0.0000	59.90	6.373	548.48	412.6	0.2545	1.39967	0.0000851	26.25	0.002	0.0001
FS24	VaporIN.Fl_O	26.32	6.667	558.88	-11.31	0.0000	60.22	6.369	551.65	412.6	0.2562	1.39927	0.0025704	26.25	0.067	0.0026
FS25	Bleed2.Fl_O	23.69	6.667	558.88	-11.31	0.0000	54.20	6.428	553.10	412.6	0.2288	1.39927	0.0025704	23.63	0.061	0.0026
FS3	HPC.Fl_O	22.54	40.628	1012.12	99.39	0.0000	11.39	35.730	976.89	49.7	0.4351	1.37957	0.0025704	22.48	0.058	0.0026
FS36	Bleed3.Fl_O	17.47	40.628	1012.12	99.39	0.0000	8.83	37.818	992.33	49.3	0.3238	1.37957	0.0025704	17.42	0.045	0.0026
FS4	Burner.Fl_O	17.66	39.693	1767.67	86.54	0.0113	12.07	37.481	1742.72	74.6	0.2947	1.32864	0.0025704	17.42	0.045	0.0163
FS45	HPT.Fl_O	23.61	9.526	1168.62	-20.65	0.0085	54.66	8.628	1138.08	265.4	0.3835	1.36376	0.0025704	23.35	0.060	0.0129
FS49	LPT.Fl_O	23.88	3.263	915.06	-83.10	0.0084	142.89	3.071	899.92	860.2	0.2975	1.37985	0.0025704	23.63	0.061	0.0127
FS5	TEGV.Fl_O	23.88	3.263	915.13	-83.10	0.0084	142.90	3.071	899.99	860.2	0.2975	1.37985	0.0025704	23.63	0.061	0.0128
FS8	Core_Nozz.Fl_O	23.88	3.263	915.20	-83.10	0.0084	142.90	2.854	882.05	613.4	0.4442	1.37984	0.0025704	23.63	0.061	0.0128
FS17	FanDuctLkg.Fl_O	225.98	4.821	496.75	-11.93	0.0000	674.16	4.045	472.44	2606.7	0.5068	1.40049	0.0000851	225.96	0.019	0.0001
FS171	Bleed15.Fl_O	228.61	4.821	497.47	-11.92	0.0000	682.50	3.911	468.59	2481.9	0.5547	1.40048	0.0001136	228.59	0.026	0.0001
FS172	FanDuct.Fl_O	228.61	4.821	497.47	-11.92	0.0000	682.50	3.911	468.59	2481.9	0.5547	1.40048	0.0001136	228.59	0.026	0.0001
FS173	Byp_Nozz.Fl_O	228.61	4.821	497.47	-11.92	0.0000	682.50	2.854	428.18	2006.9	0.8986	1.40048	0.0001136	228.59	0.026	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	747.52	1.130	0.9057	2573.075	1.0394	0.9073	-1443.6	1576.92	54.76
LPC	86.84	1.563	0.8383	2573.075	1.1625	0.8482	-691.9	6.99	3.76
HPC	54.20	6.094	0.8185	8964.236	1.8110	0.8571	-3620.0	61.50	58.17
HPT	12.07	4.167	0.8776	221.323	1.3643	0.8557	3620.0		
LPT	54.66	2.920	0.8565	72.252	1.2754	0.8369	2135.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	868.55	1.127	0.9075	2548.541	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	74.12	1.524	0.7801	0.680	0.0000	1.1716	1.0745	1.0746	0.0003
HPC	49.29	5.854	0.8270	8725.256	10.9657	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.079	0.8776	1.330	4.0789	12.6299	0.9723	1.0000	0.0003
LPT	0.84	2.444	0.8628	0.813	2.4440	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2544.20	6189.3
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2975	860.21
FanDuct	0.0000	0.5547	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.6079	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9305.2	2043.2	3620.0
LP_Shaft	2469.9	4540.9	2135.5

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	0.8716	787.61	44.04	9.526
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.2771	787.61	44.04	3.263
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	764.88	38.51	14.138
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	905.01	72.83	27.723
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	764.88	38.51	14.138
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	1012.12	99.39	40.628
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	764.88	38.51	14.138

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1000	1.0000	1.0000	2.6318	558.88	-11.31	6.667
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	2.7045	1012.12	99.39	39.693
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.3665	1012.12	99.39	22.437
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	1012.12	99.39	40.628
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	1012.12	99.39	40.628
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	1012.12	99.39	40.628
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	496.75	-11.93	4.821
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	496.75	-11.93	4.821
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	496.75	-11.93	4.821
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	496.75	-11.93	4.821

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1767.62	0.9995	0.0230	0.19739	0.01133

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.143	0.9801	1.0000	0.9800	613.40	0.444	630.1	467.7
Byp_Nozz	1.689	0.9800	1.0000	0.9800	2006.86	0.899	893.6	6349.7

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**********************************************************************************************************************************
Date:05/13/13    Time:07:26:26    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 476.99    Stator 1 exit: 484.31    Stator 2 inlet: 493.48    Stator 2 exit: 498.17
            Stator 3 inlet: 507.62    Stator 3 exit: 511.87    Stator 4 inlet: 520.70    Stator 4 exit: 524.31
            Stator 5 inlet: 531.55    Stator 5 exit: 534.68            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.46
Fan Bypass Relative Humidity       1.80
LPC Inlet Relative Humidity        1.64
LPC Exit Relative Humidity         0.17
HPC Relative Humidity              0.02
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity           738.88    Fan/LPC Inlet Flow Velocity        185.26
Ambient Static Pressure           2.95    Fan/LPC Inlet Static Pressure        4.11
Ambient Static Temperature      425.97    Fan/LPC Inlet Static Temperature   468.62
Additional Water at LPC Exit    0.0022286
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.730	38334.0	36.00	245.39	616.1	1.0985	676.77	8.7010	738.88	9.236	0.764	10.000	1739.5	1645.1	1147.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	245.39	4.201	471.48	-17.97	0.0000	818.38	2.947	425.97	2561.4	0.7300	1.40073	0.0000824	245.37	0.020	0.0001
FS1	Inlet.Fl_O	245.39	4.201	471.48	-17.97	0.0000	818.38	3.847	459.73	4168.2	0.3570	1.40073	0.0000824	245.37	0.020	0.0001
FS12	Splitter.Fl_02	220.10	4.199	471.48	-17.97	0.0000	734.39	3.796	458.06	3531.8	0.3823	1.40073	0.0000824	220.08	0.018	0.0001
FS2	Splitter.Fl_01	25.30	4.199	471.48	-17.97	0.0000	84.40	4.111	468.62	830.5	0.1745	1.40073	0.0000824	25.29	0.002	0.0001
FS14	Fan.Fl_O	220.10	4.715	489.02	-13.76	0.0000	666.16	3.978	465.84	2606.7	0.4984	1.40057	0.0000824	220.08	0.018	0.0001
FS23	LPC.Fl_O	25.30	6.425	544.15	-0.54	0.0000	59.26	6.149	537.36	412.6	0.2515	1.39985	0.0000824	25.29	0.002	0.0001
FS24	VaporIN.Fl_O	25.35	6.425	547.17	-12.64	0.0000	59.56	6.145	540.26	412.6	0.2531	1.39949	0.0023110	25.29	0.058	0.0023
FS25	Bleed2.Fl_O	22.82	6.425	547.17	-12.64	0.0000	53.60	6.201	541.64	412.6	0.2261	1.39949	0.0023110	22.76	0.053	0.0023
FS3	HPC.Fl_O	21.71	38.805	989.28	95.17	0.0000	11.36	34.159	955.02	49.7	0.4332	1.38103	0.0023110	21.66	0.050	0.0023
FS36	Bleed3.Fl_O	16.83	38.805	989.28	95.17	0.0000	8.80	36.138	970.02	49.3	0.3226	1.38103	0.0023110	16.79	0.039	0.0023
FS4	Burner.Fl_O	17.01	37.911	1739.52	82.50	0.0112	12.08	35.797	1714.88	74.6	0.2946	1.33005	0.0023110	16.79	0.039	0.0159
FS45	HPT.Fl_O	22.74	9.214	1151.35	-21.86	0.0084	54.03	8.368	1122.01	265.4	0.3779	1.36497	0.0023110	22.50	0.052	0.0125
FS49	LPT.Fl_O	23.00	3.312	912.39	-80.52	0.0083	135.37	3.139	898.97	860.2	0.2801	1.38011	0.0023110	22.76	0.053	0.0124
FS5	TEGV.Fl_O	23.00	3.312	912.46	-80.52	0.0083	135.38	3.139	899.04	860.2	0.2801	1.38010	0.0023110	22.76	0.053	0.0124
FS8	Core_Nozz.Fl_O	23.00	3.312	912.53	-80.52	0.0083	135.38	2.947	883.58	613.4	0.4147	1.38010	0.0023110	22.76	0.053	0.0124
FS17	FanDuctLkg.Fl_O	220.10	4.715	489.02	-13.76	0.0000	666.16	3.978	465.84	2606.7	0.4984	1.40057	0.0000824	220.08	0.018	0.0001
FS171	Bleed15.Fl_O	222.63	4.715	489.68	-13.75	0.0000	674.29	3.853	462.22	2481.9	0.5446	1.40056	0.0001077	222.61	0.024	0.0001
FS172	FanDuct.Fl_O	222.63	4.715	489.68	-13.75	0.0000	674.29	3.853	462.22	2481.9	0.5446	1.40056	0.0001077	222.61	0.024	0.0001
FS173	Byp_Nozz.Fl_O	222.63	4.715	489.68	-13.75	0.0000	674.29	2.947	428.07	2006.9	0.8474	1.40056	0.0001077	222.61	0.024	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	734.39	1.123	0.9049	2508.802	1.0372	0.9065	-1309.5	2134.34	54.63
LPC	84.40	1.530	0.8388	2508.802	1.1542	0.8482	-623.8	6.79	3.36
HPC	53.60	6.039	0.8177	8944.896	1.8080	0.8564	-3395.8	61.41	58.03
HPT	12.08	4.114	0.8763	220.281	1.3611	0.8544	3395.8		
LPT	54.03	2.782	0.8508	70.493	1.2599	0.8316	1933.3		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	853.29	1.120	0.9067	2484.881	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	71.33	1.495	0.7771	0.663	0.0000	1.1832	1.0700	1.0794	0.0003
HPC	48.75	5.802	0.8262	8706.431	10.9784	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.028	0.8763	1.324	4.0281	12.6299	0.9723	1.0000	0.0003
LPT	0.83	2.340	0.8571	0.793	2.3402	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2561.41	5635.4
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2801	860.21
FanDuct	0.0000	0.5446	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7010	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9187.4	1941.2	3395.8
LP_Shaft	2391.9	4245.2	1933.3

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8397	770.14	41.26	9.214
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2670	770.14	41.26	3.312
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	747.98	35.87	13.549
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	884.70	69.29	26.500
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	747.98	35.87	13.549
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	989.28	95.17	38.805
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	747.98	35.87	13.549

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5352	547.17	-12.64	6.425
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6052	989.28	95.17	37.911
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.2796	989.28	95.17	21.496
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	989.28	95.17	38.805
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	989.28	95.17	38.805
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	989.28	95.17	38.805
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	489.02	-13.76	4.715
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	489.02	-13.76	4.715
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	489.02	-13.76	4.715
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	489.02	-13.76	4.715

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1739.46	0.9995	0.0230	0.18799	0.01120

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.124	0.9801	1.0000	0.9800	613.40	0.415	588.7	420.9
Byp_Nozz	1.600	0.9800	1.0000	0.9800	2006.86	0.847	842.6	5830.6

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**********************************************************************************************************************************
Date:05/13/13    Time:07:26:42    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 26/ 1/10    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 474.90    Stator 1 exit: 482.02    Stator 2 inlet: 490.95    Stator 2 exit: 495.51
            Stator 3 inlet: 504.71    Stator 3 exit: 508.84    Stator 4 inlet: 517.43    Stator 4 exit: 520.93
            Stator 5 inlet: 527.97    Stator 5 exit: 531.01            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.63
Fan Bypass Relative Humidity       1.94
LPC Inlet Relative Humidity        1.76
LPC Exit Relative Humidity         0.19
HPC Relative Humidity              0.02
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          722.68    Fan/LPC Inlet Flow Velocity        182.50
Ambient Static Pressure          3.09    Fan/LPC Inlet Static Pressure        4.25
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   466.73
Additional Water at LPC Exit   0.0020327
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.714	37357.0	36.00	251.93	628.7	1.0937	687.60	8.7439	722.68	9.107	0.772	10.000	1728.0	1633.9	1140.1

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	251.93	4.339	469.50	-18.42	0.0000	811.77	3.088	425.97	2565.2	0.7140	1.40075	0.0000786	251.91	0.020	0.0001
FS1	Inlet.Fl_O	251.93	4.339	469.50	-18.42	0.0000	811.77	3.980	458.02	4168.2	0.3536	1.40075	0.0000786	251.91	0.020	0.0001
FS12	Splitter.Fl_02	226.07	4.337	469.50	-18.42	0.0000	728.83	3.928	456.38	3531.8	0.3788	1.40075	0.0000786	226.06	0.018	0.0001
FS2	Splitter.Fl_01	25.86	4.337	469.50	-18.42	0.0000	83.35	4.248	466.73	830.5	0.1723	1.40075	0.0000786	25.85	0.002	0.0001
FS14	Fan.Fl_O	226.07	4.856	486.54	-14.34	0.0000	662.72	4.107	463.79	2606.7	0.4948	1.40060	0.0000786	226.06	0.018	0.0001
FS23	LPC.Fl_O	25.86	6.578	540.27	-1.45	0.0000	58.96	6.298	533.60	412.6	0.2501	1.39991	0.0000786	25.85	0.002	0.0001
FS24	VaporIN.Fl_O	25.91	6.578	543.04	-12.48	0.0000	59.23	6.294	536.26	412.6	0.2516	1.39958	0.0021113	25.85	0.055	0.0021
FS25	Bleed2.Fl_O	23.32	6.578	543.04	-12.48	0.0000	53.31	6.350	537.62	412.6	0.2247	1.39958	0.0021113	23.27	0.049	0.0021
FS3	HPC.Fl_O	22.19	39.517	980.74	94.17	0.0000	11.35	34.796	946.82	49.7	0.4326	1.38157	0.0021113	22.14	0.047	0.0021
FS36	Bleed3.Fl_O	17.19	39.517	980.74	94.17	0.0000	8.79	36.806	961.67	49.3	0.3222	1.38157	0.0021113	17.16	0.036	0.0021
FS4	Burner.Fl_O	17.39	38.607	1728.02	81.59	0.0111	12.08	36.454	1703.50	74.6	0.2946	1.33065	0.0021113	17.16	0.036	0.0156
FS45	HPT.Fl_O	23.24	9.427	1144.30	-21.65	0.0083	53.80	8.569	1115.40	265.4	0.3759	1.36548	0.0021113	23.00	0.049	0.0122
FS49	LPT.Fl_O	23.51	3.452	910.93	-78.87	0.0082	132.64	3.279	898.11	860.2	0.2739	1.38025	0.0021113	23.27	0.049	0.0121
FS5	TEGV.Fl_O	23.51	3.452	911.00	-78.87	0.0082	132.64	3.279	898.18	860.2	0.2739	1.38025	0.0021113	23.27	0.049	0.0121
FS8	Core_Nozz.Fl_O	23.51	3.452	911.07	-78.87	0.0082	132.65	3.088	883.55	613.4	0.4043	1.38024	0.0021113	23.27	0.049	0.0121
FS17	FanDuctLkg.Fl_O	226.07	4.856	486.54	-14.34	0.0000	662.72	4.107	463.79	2606.7	0.4948	1.40060	0.0000786	226.06	0.018	0.0001
FS171	Bleed15.Fl_O	228.66	4.856	487.19	-14.32	0.0000	670.75	3.981	460.27	2481.9	0.5403	1.40059	0.0001016	228.64	0.023	0.0001
FS172	FanDuct.Fl_O	228.66	4.856	487.19	-14.32	0.0000	670.75	3.981	460.27	2481.9	0.5403	1.40059	0.0001016	228.64	0.023	0.0001
FS173	Byp_Nozz.Fl_O	228.66	4.856	487.19	-14.32	0.0000	670.75	3.088	428.03	2006.9	0.8304	1.40059	0.0001016	228.64	0.023	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	728.83	1.120	0.9045	2481.637	1.0363	0.9060	-1306.4	2512.84	54.57
LPC	83.35	1.517	0.8389	2481.637	1.1507	0.8481	-620.8	6.70	3.29
HPC	53.31	6.008	0.8172	8935.248	1.8060	0.8559	-3433.3	61.49	58.07
HPT	12.08	4.095	0.8757	219.940	1.3600	0.8537	3433.3		
LPT	53.80	2.731	0.8485	69.798	1.2541	0.8295	1927.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	846.83	1.117	0.9063	2457.975	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	70.16	1.483	0.7758	0.655	0.0000	1.1881	1.0689	1.0813	0.0003
HPC	48.48	5.772	0.8257	8697.040	10.9773	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.010	0.8757	1.322	4.0097	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.302	0.8548	0.785	2.3019	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2565.23	5658.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2739	860.21
FanDuct	0.0000	0.5403	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7439	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9142.8	1972.3	3433.3
LP_Shaft	2361.1	4287.0	1927.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8581	763.74	40.84	9.427
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2728	763.74	40.84	3.452
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	741.80	35.51	13.824
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	877.17	68.57	27.000
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	741.80	35.51	13.824
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	980.74	94.17	39.517
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	741.80	35.51	13.824

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5908	543.04	-12.48	6.578
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6623	980.74	94.17	38.607
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3296	980.74	94.17	21.916
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	980.74	94.17	39.517
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	980.74	94.17	39.517
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	980.74	94.17	39.517
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	486.54	-14.34	4.856
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	486.54	-14.34	4.856
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	486.54	-14.34	4.856
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	486.54	-14.34	4.856

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1727.96	0.9995	0.0230	0.19100	0.01113

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.118	0.9801	1.0000	0.9800	613.40	0.404	573.9	419.3
Byp_Nozz	1.572	0.9800	1.0000	0.9800	2006.86	0.830	825.7	5868.1

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**********************************************************************************************************************************
Date:05/13/13    Time:07:26:57    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 10/ 24/ 1/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 476.29    Stator 1 exit: 482.95    Stator 2 inlet: 491.29    Stator 2 exit: 495.54
            Stator 3 inlet: 504.12    Stator 3 exit: 507.94    Stator 4 inlet: 515.96    Stator 4 exit: 519.18
            Stator 5 inlet: 525.74    Stator 5 exit: 528.52            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.24
Fan Bypass Relative Humidity       2.48
LPC Inlet Relative Humidity        2.22
LPC Exit Relative Humidity         0.28
HPC Relative Humidity              0.02
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          682.24    Fan/LPC Inlet Flow Velocity        176.05
Ambient Static Pressure          3.58    Fan/LPC Inlet Static Pressure        4.74
Ambient Static Temperature     432.42    Fan/LPC Inlet Static Temperature   468.63
Additional Water at LPC Exit   0.0018496
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.669	34281.0	36.00	272.75	675.2	1.0861	733.31	8.8476	682.24	8.731	0.795	10.000	1716.8	1623.0	1134.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	272.75	4.831	471.21	-18.12	0.0000	790.84	3.578	432.42	2577.9	0.6690	1.40074	0.0000968	272.72	0.026	0.0001
FS1	Inlet.Fl_O	272.75	4.831	471.21	-18.12	0.0000	790.84	4.453	460.36	4168.2	0.3430	1.40074	0.0000968	272.72	0.026	0.0001
FS12	Splitter.Fl_02	245.05	4.829	471.21	-18.12	0.0000	710.89	4.398	458.78	3531.8	0.3677	1.40074	0.0000968	245.03	0.024	0.0001
FS2	Splitter.Fl_01	27.70	4.829	471.21	-18.12	0.0000	80.35	4.737	468.63	830.5	0.1658	1.40074	0.0000968	27.69	0.003	0.0001
FS14	Fan.Fl_O	245.05	5.363	487.11	-14.31	0.0000	650.78	4.573	465.39	2606.7	0.4826	1.40059	0.0000968	245.03	0.024	0.0001
FS23	LPC.Fl_O	27.70	7.130	537.35	-2.26	0.0000	58.11	6.835	530.91	412.6	0.2463	1.39995	0.0000968	27.69	0.003	0.0001
FS24	VaporIN.Fl_O	27.75	7.130	539.88	-12.30	0.0000	58.35	6.832	533.35	412.6	0.2475	1.39966	0.0019464	27.69	0.054	0.0019
FS25	Bleed2.Fl_O	24.97	7.130	539.88	-12.30	0.0000	52.52	6.891	534.66	412.6	0.2212	1.39966	0.0019464	24.93	0.049	0.0019
FS3	HPC.Fl_O	23.76	42.182	971.40	92.78	0.0000	11.33	37.160	937.89	49.7	0.4317	1.38216	0.0019464	23.72	0.046	0.0019
FS36	Bleed3.Fl_O	18.42	42.182	971.40	92.78	0.0000	8.78	39.298	952.55	49.3	0.3216	1.38216	0.0019464	18.38	0.036	0.0019
FS4	Burner.Fl_O	18.62	41.210	1716.81	80.27	0.0111	12.08	38.912	1692.45	74.6	0.2945	1.33124	0.0019464	18.38	0.036	0.0154
FS45	HPT.Fl_O	24.89	10.178	1139.03	-21.42	0.0083	53.25	9.274	1110.94	265.4	0.3712	1.36587	0.0019464	24.63	0.048	0.0120
FS49	LPT.Fl_O	25.18	3.940	919.16	-75.23	0.0082	125.00	3.766	907.78	860.2	0.2568	1.37981	0.0019464	24.93	0.049	0.0119
FS5	TEGV.Fl_O	25.18	3.940	919.23	-75.23	0.0082	125.01	3.766	907.85	860.2	0.2568	1.37981	0.0019464	24.93	0.049	0.0119
FS8	Core_Nozz.Fl_O	25.18	3.940	919.30	-75.23	0.0082	125.01	3.578	895.18	613.5	0.3762	1.37980	0.0019464	24.93	0.049	0.0119
FS17	FanDuctLkg.Fl_O	245.05	5.363	487.11	-14.31	0.0000	650.78	4.573	465.39	2606.7	0.4826	1.40059	0.0000968	245.03	0.024	0.0001
FS171	Bleed15.Fl_O	247.83	5.363	487.70	-14.28	0.0000	658.55	4.442	462.10	2481.9	0.5258	1.40058	0.0001175	247.80	0.029	0.0001
FS172	FanDuct.Fl_O	247.83	5.363	487.70	-14.28	0.0000	658.55	4.442	462.10	2481.9	0.5258	1.40058	0.0001175	247.80	0.029	0.0001
FS173	Byp_Nozz.Fl_O	247.83	5.363	487.70	-14.28	0.0000	658.55	3.578	434.38	2006.9	0.7826	1.40058	0.0001175	247.80	0.029	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	710.89	1.111	0.9034	2399.012	1.0337	0.9048	-1320.9	5509.81	54.17
LPC	80.35	1.477	0.8398	2399.012	1.1404	0.8483	-621.5	6.42	3.06
HPC	52.52	5.916	0.8157	8909.373	1.7993	0.8544	-3622.8	61.89	58.39
HPT	12.08	4.049	0.8750	219.376	1.3567	0.8530	3622.8		
LPT	53.25	2.583	0.8433	67.753	1.2370	0.8248	1942.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	825.99	1.108	0.9052	2376.137	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	66.58	1.446	0.7720	0.634	0.0000	1.2067	1.0675	1.0878	0.0003
HPC	47.77	5.685	0.8241	8671.855	10.9625	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.964	0.8750	1.318	3.9644	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.191	0.8496	0.762	2.1907	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2577.87	5783.5
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2568	860.21
FanDuct	0.0000	0.5258	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8476	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9089.7	2093.3	3622.8
LP_Shaft	2286.6	4461.6	1942.5

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9190	757.41	40.24	10.178
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2922	757.41	40.24	3.940
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	735.78	34.99	14.841
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	869.24	67.56	28.862
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	735.78	34.99	14.841
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	971.40	92.78	42.182
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	735.78	34.99	14.841

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.7748	539.88	-12.30	7.130
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.8515	971.40	92.78	41.210
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.4951	971.40	92.78	23.460
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	971.40	92.78	42.182
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	971.40	92.78	42.182
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	971.40	92.78	42.182
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	487.11	-14.31	5.363
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	487.11	-14.31	5.363
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	487.11	-14.31	5.363
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	487.11	-14.31	5.363

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1716.76	0.9995	0.0230	0.20370	0.01108

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.101	0.9801	1.0000	0.9800	613.40	0.376	537.4	420.6
Byp_Nozz	1.499	0.9800	1.0000	0.9800	2006.86	0.783	783.9	6038.1

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**********************************************************************************************************************************
Date:05/13/13    Time:07:27:15    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 15/ 29/ 1/13    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 484.57    Stator 1 exit: 490.29    Stator 2 inlet: 497.36    Stator 2 exit: 500.79
            Stator 3 inlet: 508.16    Stator 3 exit: 511.17    Stator 4 inlet: 518.10    Stator 4 exit: 520.59
            Stator 5 inlet: 526.17    Stator 5 exit: 528.27            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.19
Fan Bypass Relative Humidity       3.36
LPC Inlet Relative Humidity        3.05
LPC Exit Relative Humidity         0.57
HPC Relative Humidity              0.02
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          630.80    Fan/LPC Inlet Flow Velocity        176.82
Ambient Static Pressure          4.36    Fan/LPC Inlet Static Pressure        5.49
Ambient Static Temperature     447.58    Fan/LPC Inlet Static Temperature   478.13
Additional Water at LPC Exit   0.0018320
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.608	30029.0	36.00	298.22	718.6	1.1019	791.89	8.4428	630.80	8.114	0.827	10.000	1714.5	1620.4	1136.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	298.22	5.595	480.74	-16.28	0.0000	754.13	4.358	447.58	2590.5	0.6080	1.40064	0.0001750	298.17	0.052	0.0002
FS1	Inlet.Fl_O	298.22	5.595	480.74	-16.28	0.0000	754.13	5.201	470.79	4168.2	0.3248	1.40064	0.0001750	298.17	0.052	0.0002
FS12	Splitter.Fl_02	266.64	5.592	480.74	-16.28	0.0000	674.60	5.148	469.49	3531.8	0.3457	1.40064	0.0001750	266.60	0.047	0.0002
FS2	Splitter.Fl_01	31.58	5.592	480.74	-16.28	0.0000	79.90	5.487	478.13	830.5	0.1649	1.40064	0.0001750	31.58	0.006	0.0002
FS14	Fan.Fl_O	266.64	6.134	495.01	-12.86	0.0000	624.13	5.317	475.19	2606.7	0.4563	1.40050	0.0001750	266.60	0.047	0.0002
FS23	LPC.Fl_O	31.58	7.815	537.27	-2.73	0.0000	60.45	7.464	530.27	412.6	0.2570	1.39994	0.0001750	31.58	0.006	0.0002
FS24	VaporIN.Fl_O	31.64	7.815	539.78	-12.67	0.0000	60.70	7.461	532.67	412.6	0.2583	1.39965	0.0020069	31.58	0.063	0.0020
FS25	Bleed2.Fl_O	26.89	7.815	539.78	-12.67	0.0000	51.59	7.563	534.74	412.6	0.2170	1.39965	0.0020069	26.84	0.054	0.0020
FS3	HPC.Fl_O	25.59	45.396	966.66	91.26	0.0000	11.31	40.015	933.44	49.7	0.4307	1.38243	0.0020069	25.54	0.051	0.0020
FS36	Bleed3.Fl_O	19.83	45.396	966.66	91.26	0.0000	8.76	42.305	947.96	49.3	0.3209	1.38243	0.0020069	19.79	0.040	0.0020
FS4	Burner.Fl_O	20.05	44.351	1714.49	78.73	0.0111	12.08	41.878	1690.16	74.6	0.2945	1.33132	0.0020069	19.79	0.040	0.0155
FS45	HPT.Fl_O	26.80	11.115	1140.52	-21.80	0.0083	52.54	10.156	1113.25	265.4	0.3654	1.36575	0.0020069	26.53	0.053	0.0121
FS49	LPT.Fl_O	27.11	4.711	941.00	-70.55	0.0082	113.93	4.540	931.46	860.2	0.2325	1.37848	0.0020069	26.84	0.054	0.0120
FS5	TEGV.Fl_O	27.11	4.711	941.07	-70.55	0.0082	113.93	4.540	931.53	860.2	0.2325	1.37848	0.0020069	26.84	0.054	0.0120
FS8	Core_Nozz.Fl_O	27.11	4.711	941.14	-70.55	0.0082	113.94	4.358	921.23	613.4	0.3376	1.37847	0.0020069	26.84	0.054	0.0120
FS17	FanDuctLkg.Fl_O	266.64	6.134	495.01	-12.86	0.0000	624.13	5.317	475.19	2606.7	0.4563	1.40050	0.0001750	266.60	0.047	0.0002
FS171	Bleed15.Fl_O	271.39	6.134	495.80	-12.86	0.0000	635.74	5.170	472.15	2481.9	0.5000	1.40048	0.0002070	271.33	0.056	0.0002
FS172	FanDuct.Fl_O	271.39	6.134	495.80	-12.86	0.0000	635.74	5.170	472.15	2481.9	0.5000	1.40048	0.0002070	271.33	0.056	0.0002
FS173	Byp_Nozz.Fl_O	271.39	6.134	495.80	-12.86	0.0000	635.74	4.358	449.63	2006.9	0.7159	1.40048	0.0002070	271.33	0.056	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	674.60	1.097	0.9017	2242.889	1.0297	0.9030	-1291.2	-8700.18	52.77
LPC	79.90	1.397	0.8538	2242.889	1.1176	0.8605	-605.9	5.97	2.61
HPC	51.59	5.809	0.8137	8878.896	1.7908	0.8526	-3858.9	62.39	58.77
HPT	12.08	3.990	0.8747	218.753	1.3522	0.8529	3858.9		
LPT	52.54	2.359	0.8343	63.939	1.2096	0.8170	1897.1		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	783.82	1.095	0.9035	2221.503	0.0416	0.8607	1.0235	0.9980	0.9905
LPC	60.10	1.380	0.7653	0.592	0.0000	1.3295	1.0471	1.1156	0.0003
HPC	46.92	5.582	0.8222	8642.190	10.9446	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.907	0.8746	1.315	3.9072	12.6299	0.9723	1.0000	0.0003
LPT	0.81	2.022	0.8405	0.719	2.0225	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2590.54	5846.9
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2325	860.21
FanDuct	0.0000	0.5000	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.4428	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9057.8	2237.6	3858.9
LP_Shaft	2159.3	4614.3	1897.1

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9897	754.94	39.30	11.115
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3147	754.94	39.30	4.711
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	733.54	34.10	16.083
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	865.58	66.32	31.115
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	733.54	34.10	16.083
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	966.66	91.26	45.396
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	733.54	34.10	16.083

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1500	1.0000	1.0000	4.7460	539.78	-12.67	7.815
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.0708	966.66	91.26	44.351
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.6870	966.66	91.26	25.340
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	966.66	91.26	45.396
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	966.66	91.26	45.396
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	966.66	91.26	45.396
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	495.01	-12.86	6.134
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	495.01	-12.86	6.134
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	495.01	-12.86	6.134
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	495.01	-12.86	6.134

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1714.43	0.9995	0.0230	0.21997	0.01111

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.081	0.9801	1.0000	0.9800	613.40	0.338	489.0	412.1
Byp_Nozz	1.407	0.9800	1.0000	0.9800	2006.86	0.716	729.5	6153.4

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*************************************************************************************************************************************
Date:05/13/13    Time:07:27:45    Model:                                      Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 22/ 50/ 2/19    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 492.34    Stator 1 exit: 496.52    Stator 2 inlet: 501.28    Stator 2 exit: 503.16
            Stator 3 inlet: 508.43    Stator 3 exit: 509.89    Stator 4 inlet: 514.95    Stator 4 exit: 516.00
            Stator 5 inlet: 519.70    Stator 5 exit: 520.47             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.02
Fan Bypass Relative Humidity       4.20
LPC Inlet Relative Humidity        4.03
LPC Exit Relative Humidity         1.36
HPC Relative Humidity              0.02
Drop Diameter                 0.0000100    Inlet Length                          40.00
Ambient Flow Velocity            582.56    Fan/LPC Inlet Flow Velocity          195.14
Ambient Static Pressure            5.30    Fan/LPC Inlet Static Pressure          6.37
Ambient Static Temperature       463.14    Fan/LPC Inlet Static Temperature     488.24
Additional Water at LPC Exit  0.0016385
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.552	25666.0	36.00	322.38	718.6	1.1634	836.02	7.1400	582.56	7.201	0.857	10.000	1718.4	1622.2	1143.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	322.38	6.516	491.41	-14.47	0.0000	707.72	5.297	463.14	2581.9	0.5520	1.40052	0.0003043	322.28	0.098	0.0003
FS1	Inlet.Fl_O	322.38	6.516	491.41	-14.47	0.0000	707.72	6.116	482.58	4168.2	0.3023	1.40052	0.0003043	322.28	0.098	0.0003
FS12	Splitter.Fl_02	282.78	6.513	491.41	-14.47	0.0000	621.08	6.081	481.87	3531.8	0.3145	1.40052	0.0003043	282.69	0.086	0.0003
FS2	Splitter.Fl_01	39.60	6.513	491.41	-14.47	0.0000	86.99	6.367	488.24	830.5	0.1801	1.40052	0.0003043	39.59	0.012	0.0003
FS14	Fan.Fl_O	282.78	7.042	503.71	-11.52	0.0000	581.59	6.248	486.77	2606.7	0.4169	1.40038	0.0003043	282.69	0.086	0.0003
FS23	LPC.Fl_O	39.60	8.195	531.87	-4.77	0.0000	71.92	7.662	521.75	412.6	0.3114	1.40001	0.0003043	39.59	0.012	0.0003
FS24	VaporIN.Fl_O	39.67	8.195	534.13	-13.66	0.0000	72.19	7.657	523.87	412.6	0.3129	1.39975	0.0019428	39.59	0.077	0.0019
FS25	Bleed2.Fl_O	27.77	8.195	534.13	-13.66	0.0000	50.53	7.942	529.36	412.6	0.2123	1.39975	0.0019428	27.72	0.054	0.0019
FS3	HPC.Fl_O	26.42	46.925	953.42	88.34	0.0000	11.22	41.467	921.25	49.7	0.4262	1.38323	0.0019428	26.37	0.051	0.0019
FS36	Bleed3.Fl_O	20.48	46.925	953.42	88.34	0.0000	8.69	43.785	935.28	49.3	0.3179	1.38323	0.0019428	20.44	0.040	0.0019
FS4	Burner.Fl_O	20.71	45.844	1718.39	75.56	0.0114	12.08	43.287	1694.00	74.6	0.2947	1.33097	0.0019428	20.44	0.040	0.0157
FS45	HPT.Fl_O	27.68	11.875	1148.20	-22.96	0.0085	50.96	10.918	1122.64	265.4	0.3526	1.36514	0.0019428	27.39	0.053	0.0123
FS49	LPT.Fl_O	28.00	5.616	972.42	-65.77	0.0084	100.33	5.459	964.90	860.2	0.2034	1.37646	0.0019428	27.72	0.054	0.0122
FS5	TEGV.Fl_O	28.00	5.616	972.49	-65.77	0.0084	100.33	5.459	964.97	860.2	0.2034	1.37646	0.0019428	27.72	0.054	0.0122
FS8	Core_Nozz.Fl_O	28.00	5.616	972.56	-65.77	0.0084	100.33	5.297	957.10	613.4	0.2927	1.37645	0.0019428	27.72	0.054	0.0122
FS17	FanDuctLkg.Fl_O	282.78	7.042	503.71	-11.52	0.0000	581.59	6.248	486.77	2606.7	0.4169	1.40038	0.0003043	282.69	0.086	0.0003
FS171	Bleed15.Fl_O	294.68	7.042	504.94	-11.61	0.0000	606.81	6.055	483.62	2481.9	0.4692	1.40036	0.0003704	294.57	0.109	0.0004
FS172	FanDuct.Fl_O	294.68	7.042	504.94	-11.61	0.0000	606.81	6.055	483.62	2481.9	0.4692	1.40036	0.0003704	294.57	0.109	0.0004
FS173	Byp_Nozz.Fl_O	294.68	7.042	504.94	-11.61	0.0000	606.81	5.297	465.46	2006.9	0.6508	1.40036	0.0003704	294.57	0.109	0.0004

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	621.08	1.081	0.9019	2028.608	1.0250	0.9030	-1180.0	-2623.37	49.99
LPC	86.99	1.258	0.8246	2028.608	1.0823	0.8302	-543.8	6.42	2.41
HPC	50.53	5.726	0.8120	8845.140	1.7850	0.8510	-3910.4	61.84	58.11
HPT	12.08	3.860	0.8755	216.532	1.3427	0.8545	3910.3		
LPT	50.96	2.114	0.8239	58.273	1.1779	0.8081	1723.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	721.64	1.079	0.9038	2009.265	0.0424	0.8607	1.0235	0.9980	0.9905
LPC	52.94	1.306	0.7604	0.536	0.0000	1.6433	0.8452	1.0844	0.0003
HPC	45.96	5.503	0.8204	8609.335	10.9922	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.781	0.8755	1.301	3.7812	12.6299	0.9723	1.0000	0.0003
LPT	0.78	1.838	0.8300	0.656	1.8382	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2581.91	5837.3

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2034	860.21
FanDuct	0.0000	0.4692	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.1400	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8976.0	2288.0	3910.3
LP_Shaft	1974.6	4585.0	1723.8

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0219	745.39	37.34	11.875
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3249	745.39	37.34	5.616
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	724.38	32.24	16.716
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	854.08	63.86	32.208
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	724.38	32.24	16.716
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	953.42	88.34	46.925
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	724.38	32.24	16.716

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.3000	1.0000	1.0000	11.9010	534.13	-13.66	8.195
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.1707	953.42	88.34	45.844
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.7744	953.42	88.34	26.414
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	953.42	88.34	46.925
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	953.42	88.34	46.925
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	953.42	88.34	46.925
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	503.71	-11.52	7.042
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	503.71	-11.52	7.042
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	503.71	-11.52	7.042
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	503.71	-11.52	7.042

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1718.34	0.9995	0.0230	0.23223	0.01136

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.060	0.9801	1.0000	0.9800	613.40	0.293	431.7	375.7
Byp_Nozz	1.329	0.9800	1.0000	0.9800	2006.86	0.651	674.8	6180.1

```
**********************************************************************************************************************************
Date:05/13/13    Time:07:28:17    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 29/ 57/ 2/26    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 505.27    Stator 1 exit: 508.26    Stator 2 inlet: 511.07    Stator 2 exit: 511.88
            Stator 3 inlet: 515.27    Stator 3 exit: 515.65    Stator 4 inlet: 518.94    Stator 4 exit: 519.02
            Stator 5 inlet: 520.94    Stator 5 exit: 520.82            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         6.01
Fan Bypass Relative Humidity       5.18
LPC Inlet Relative Humidity        5.20
LPC Exit Relative Humidity         2.82
HPC Relative Humidity              0.03
Drop Diameter                0.0000100    Inlet Length                        40.00
Ambient Flow Velocity          528.20    Fan/LPC Inlet Flow Velocity        202.80
Ambient Static Pressure          6.74    Fan/LPC Inlet Static Pressure        7.75
Ambient Static Temperature     483.18    Fan/LPC Inlet Static Temperature   502.99
Additional Water at LPC Exit   0.0016391
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.490	20047.0	36.00	357.84	772.0	1.1870	916.37	6.3566	528.20	6.264	0.888	10.000	1742.0	1642.4	1169.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	357.84	7.943	506.41	-12.46	0.0000	654.18	6.740	483.18	2591.9	0.4900	1.40031	0.0005787	357.63	0.207	0.0006
FS1	Inlet.Fl_O	357.84	7.943	506.41	-12.46	0.0000	654.18	7.530	498.74	4168.2	0.2771	1.40031	0.0005787	357.63	0.207	0.0006
FS12	Splitter.Fl_02	309.20	7.939	506.41	-12.46	0.0000	565.54	7.509	498.40	3531.8	0.2833	1.40031	0.0005787	309.02	0.179	0.0006
FS2	Splitter.Fl_01	48.64	7.939	506.41	-12.46	0.0000	88.97	7.753	502.99	830.5	0.1844	1.40031	0.0005787	48.61	0.028	0.0006
FS14	Fan.Fl_O	309.20	8.483	517.12	-9.89	0.0000	534.86	7.693	502.86	2606.7	0.3763	1.40017	0.0005787	309.02	0.179	0.0006
FS23	LPC.Fl_O	48.64	9.069	534.49	-5.72	0.0000	80.02	8.324	521.56	412.6	0.3520	1.39993	0.0005787	48.61	0.028	0.0006
FS24	VaporIN.Fl_O	48.72	9.069	536.74	-14.61	0.0000	80.32	8.317	523.64	412.6	0.3538	1.39967	0.0022178	48.61	0.108	0.0022
FS25	Bleed2.Fl_O	29.23	9.069	536.74	-14.61	0.0000	48.19	8.814	532.40	412.6	0.2020	1.39967	0.0022178	29.17	0.065	0.0022
FS3	HPC.Fl_O	27.82	49.753	947.33	85.28	0.0000	11.10	44.103	916.15	49.7	0.4207	1.38355	0.0022178	27.75	0.062	0.0022
FS36	Bleed3.Fl_O	21.56	49.753	947.33	85.28	0.0000	8.61	46.497	929.71	49.3	0.3142	1.38355	0.0022178	21.51	0.048	0.0022
FS4	Burner.Fl_O	21.81	48.608	1742.04	72.01	0.0118	12.09	45.894	1717.37	74.6	0.2949	1.32952	0.0022178	21.51	0.048	0.0166
FS45	HPT.Fl_O	29.15	13.295	1174.54	-24.25	0.0088	48.48	12.335	1151.28	265.4	0.3332	1.36317	0.0022178	28.83	0.064	0.0130
FS49	LPT.Fl_O	29.49	7.032	1020.75	-61.62	0.0087	86.45	6.887	1014.99	860.2	0.1743	1.37316	0.0022178	29.17	0.065	0.0129
FS5	TEGV.Fl_O	29.49	7.032	1020.82	-61.62	0.0087	86.46	6.887	1015.06	860.2	0.1743	1.37315	0.0022178	29.17	0.065	0.0129
FS8	Core_Nozz.Fl_O	29.49	7.032	1020.89	-61.62	0.0087	86.46	6.740	1009.20	613.4	0.2491	1.37315	0.0022178	29.17	0.065	0.0129
FS17	FanDuctLkg.Fl_O	309.20	8.483	517.12	-9.89	0.0000	534.86	7.693	502.86	2606.7	0.3763	1.40017	0.0005787	309.02	0.179	0.0006
FS171	Bleed15.Fl_O	328.68	8.483	518.28	-10.17	0.0000	569.22	7.463	499.64	2481.9	0.4317	1.40015	0.0006757	328.46	0.222	0.0007
FS172	FanDuct.Fl_O	328.68	8.483	518.28	-10.17	0.0000	569.22	7.463	499.64	2481.9	0.4317	1.40015	0.0006757	328.46	0.222	0.0007
FS173	Byp_Nozz.Fl_O	328.68	8.483	518.28	-10.17	0.0000	569.22	6.740	485.31	2006.9	0.5826	1.40015	0.0006757	328.46	0.222	0.0007

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	565.54	1.068	0.9037	1818.644	1.0211	0.9046	-1124.1	-1837.84	46.55
LPC	88.97	1.142	0.6988	1818.644	1.0554	0.7044	-463.8	7.11	2.05
HPC	48.19	5.486	0.8076	8765.766	1.7650	0.8467	-4031.4	62.22	58.20
HPT	12.09	3.656	0.8769	213.647	1.3264	0.8570	4031.4		
LPT	48.48	1.891	0.8158	52.435	1.1473	0.8020	1587.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	657.10	1.067	0.9056	1801.304	0.0437	0.8607	1.0235	0.9980	0.9905
LPC	46.11	1.239	0.7548	0.480	0.0000	1.9294	0.5948	0.9257	0.0003
HPC	43.83	5.275	0.8160	8532.076	11.0030	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.582	0.8769	1.284	3.5824	12.6299	0.9723	1.0000	0.0003
LPT	0.74	1.670	0.8218	0.590	1.6699	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2591.91	5874.6
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1743	860.21
FanDuct	0.0000	0.4317	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.3566	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8917.2	2374.4	4031.4
LP_Shaft	1797.0	4640.9	1587.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0758	743.58	35.33	13.295
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3420	743.58	35.33	7.032
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	723.00	30.34	18.019
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	850.02	61.31	34.293
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	723.00	30.34	18.019
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	947.33	85.28	49.753
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	723.00	30.34	18.019

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	19.4886	536.74	-14.61	9.069
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.3378	947.33	85.28	48.608
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.9207	947.33	85.28	28.409
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	947.33	85.28	49.753
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	947.33	85.28	49.753
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	947.33	85.28	49.753
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	517.12	-9.89	8.483
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	517.12	-9.89	8.483
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	517.12	-9.89	8.483
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	517.12	-9.89	8.483

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1741.99	0.9995	0.0230	0.25455	0.01183

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.043	0.9801	1.0000	0.9800	613.40	0.249	376.8	345.3
Byp_Nozz	1.259	0.9800	1.0000	0.9800	2006.86	0.583	616.8	6301.3

25μm, ISA +18R

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**********************************************************************************************************************************
Date:05/13/13    Time:09:35:49    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 463.25    Stator 1 exit: 470.65    Stator 2 inlet: 479.96    Stator 2 exit: 484.71
            Stator 3 inlet: 494.33    Stator 3 exit: 498.66    Stator 4 inlet: 507.66    Stator 4 exit: 511.34
            Stator 5 inlet: 518.73    Stator 5 exit: 521.95            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.76
Fan Bypass Relative Humidity       1.24
LPC Inlet Relative Humidity        1.13
LPC Exit Relative Humidity         0.10
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          772.64    Fan/LPC Inlet Flow Velocity        187.85
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   454.80
Additional Water at LPC Exit   0.0002383
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	257.27	609.3	1.1329	690.29	8.5968	772.64	9.489	0.736	10.000	1694.0	1602.0	1113.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	257.27	4.267	457.74	-20.96	0.0000	832.43	2.854	407.97	2539.5	0.7800	1.40084	0.0000295	257.26	0.008	0.0000
FS1	Inlet.Fl_O	257.27	4.267	457.74	-20.96	0.0000	832.43	3.893	445.88	4168.2	0.3642	1.40084	0.0000295	257.26	0.008	0.0000
FS12	Splitter.Fl_02	230.46	4.265	457.74	-20.96	0.0000	746.07	3.841	444.22	3531.8	0.3896	1.40084	0.0000295	230.46	0.007	0.0000
FS2	Splitter.Fl_01	26.81	4.265	457.74	-20.96	0.0000	86.78	4.170	454.80	830.5	0.1796	1.40084	0.0000295	26.81	0.001	0.0000
FS14	Fan.Fl_O	230.46	4.811	475.50	-16.70	0.0000	674.00	4.038	452.24	2606.7	0.5066	1.40071	0.0000295	230.46	0.007	0.0000
FS23	LPC.Fl_O	26.81	6.640	531.29	-3.32	0.0000	60.05	6.346	524.46	412.6	0.2551	1.40005	0.0000295	26.81	0.001	0.0000
FS24	VaporIN.Fl_O	26.81	6.640	531.65	-4.61	0.0000	60.08	6.346	524.80	412.6	0.2553	1.40001	0.0002677	26.81	0.007	0.0003
FS25	Bleed2.Fl_O	24.13	6.640	531.65	-4.61	0.0000	54.08	6.404	526.17	412.6	0.2280	1.40001	0.0002677	24.13	0.006	0.0003
FS3	HPC.Fl_O	22.96	40.489	964.75	100.64	0.0000	11.37	35.638	931.20	49.7	0.4331	1.38282	0.0002677	22.96	0.006	0.0003
FS36	Bleed3.Fl_O	17.80	40.489	964.75	100.64	0.0000	8.81	37.704	945.89	49.3	0.3225	1.38282	0.0002677	17.79	0.005	0.0003
FS4	Burner.Fl_O	17.99	39.556	1694.00	88.37	0.0108	12.08	37.354	1669.90	74.6	0.2941	1.33277	0.0002677	17.79	0.005	0.0134
FS45	HPT.Fl_O	24.04	9.490	1117.39	-13.58	0.0080	54.65	8.597	1088.04	265.4	0.3824	1.36768	0.0002677	23.84	0.006	0.0101
FS49	LPT.Fl_O	24.32	3.259	875.68	-72.60	0.0079	142.53	3.069	861.21	860.2	0.2961	1.38271	0.0002677	24.13	0.006	0.0100
FS5	TEGV.Fl_O	24.32	3.259	875.75	-72.60	0.0079	142.54	3.069	861.29	860.2	0.2961	1.38270	0.0002677	24.13	0.006	0.0100
FS8	Core_Nozz.Fl_O	24.32	3.259	875.82	-72.60	0.0079	142.54	2.854	844.20	613.4	0.4418	1.38270	0.0002677	24.13	0.006	0.0100
FS17	FanDuctLkg.Fl_O	230.46	4.811	475.50	-16.70	0.0000	674.00	4.038	452.24	2606.7	0.5066	1.40071	0.0000295	230.46	0.007	0.0000
FS171	Bleed15.Fl_O	233.14	4.811	476.14	-16.56	0.0000	682.31	3.904	448.52	2481.9	0.5544	1.40070	0.0000322	233.14	0.008	0.0000
FS172	FanDuct.Fl_O	233.14	4.811	476.14	-16.56	0.0000	682.31	3.904	448.52	2481.9	0.5544	1.40070	0.0000322	233.14	0.008	0.0000
FS173	Byp_Nozz.Fl_O	233.14	4.811	476.14	-16.56	0.0000	682.31	2.854	410.04	2006.9	0.8967	1.40070	0.0000322	233.14	0.008	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	746.07	1.128	0.9051	2561.318	1.0388	0.9068	-1387.4	1659.17	54.93
LPC	86.78	1.557	0.8401	2561.318	1.1607	0.8498	-668.8	6.95	3.68
HPC	54.08	6.098	0.8186	8960.575	1.8147	0.8574	-3506.7	61.09	57.76
HPT	12.08	4.168	0.8739	220.416	1.3661	0.8513	3506.7		
LPT	54.65	2.912	0.8507	71.982	1.2742	0.8305	2056.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	866.85	1.125	0.9070	2536.896	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	73.61	1.519	0.7796	0.677	0.0000	1.1790	1.0734	1.0776	0.0003
HPC	49.18	5.857	0.8271	8721.692	10.9923	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.081	0.8739	1.325	4.0806	12.6299	0.9723	1.0000	0.0003
LPT	0.84	2.438	0.8570	0.810	2.4380	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2539.48	6178.2

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2961	860.21
FanDuct	0.0000	0.5544	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.5968	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9072.0	2030.2	3506.7
LP_Shaft	2406.2	4488.1	2056.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8881	749.94	48.02	9.490
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2824	749.94	48.02	3.259
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	728.23	42.75	14.087
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	862.20	75.38	27.626
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	728.23	42.75	14.087
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	964.75	100.64	40.489
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	728.23	42.75	14.087

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6814	531.65	-4.61	6.640
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.7555	964.75	100.64	39.556
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.4111	964.75	100.64	22.358
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	964.75	100.64	40.489
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	964.75	100.64	40.489
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	964.75	100.64	40.489
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	475.50	-16.70	4.811
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.50	-16.70	4.811
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	475.50	-16.70	4.811
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.50	-16.70	4.811

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1693.94	0.9995	0.0230	0.19175	0.01078

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.142	0.9801	1.0000	0.9800	613.40	0.442	613.3	463.7
Byp_Nozz	1.686	0.9800	1.0000	0.9800	2006.86	0.897	872.7	6323.8

```
**********************************************************************************************************************************
Date:05/13/13    Time:09:36:06    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 456.76    Stator 1 exit: 463.70    Stator 2 inlet: 472.41    Stator 2 exit: 476.85
            Stator 3 inlet: 485.85    Stator 3 exit: 489.87    Stator 4 inlet: 498.28    Stator 4 exit: 501.69
            Stator 5 inlet: 508.59    Stator 5 exit: 511.56            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.23
Fan Bypass Relative Humidity       1.61
LPC Inlet Relative Humidity        1.45
LPC Exit Relative Humidity         0.13
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          723.11    Fan/LPC Inlet Flow Velocity        181.19
Ambient Static Pressure          2.95    Fan/LPC Inlet Static Pressure        4.11
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   448.83
Additional Water at LPC Exit   0.0002037
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.730	38334.0	18.00	250.31	599.9	1.0971	658.20	8.6897	723.11	9.210	0.763	10.000	1667.8	1576.4	1097.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	250.31	4.201	451.57	-22.43	0.0000	816.96	2.947	407.97	2556.9	0.7300	1.40089	0.0000285	250.31	0.007	0.0000
FS1	Inlet.Fl_O	250.31	4.201	451.57	-22.43	0.0000	816.96	3.848	440.36	4168.2	0.3563	1.40089	0.0000285	250.31	0.007	0.0000
FS12	Splitter.Fl_02	224.48	4.199	451.57	-22.43	0.0000	733.02	3.798	438.77	3531.8	0.3814	1.40089	0.0000285	224.47	0.006	0.0000
FS2	Splitter.Fl_01	25.83	4.199	451.57	-22.43	0.0000	84.35	4.111	448.83	830.5	0.1744	1.40089	0.0000285	25.83	0.001	0.0000
FS14	Fan.Fl_O	224.48	4.707	468.13	-18.46	0.0000	665.90	3.972	445.95	2606.7	0.4981	1.40077	0.0000285	224.47	0.006	0.0000
FS23	LPC.Fl_O	25.83	6.403	520.46	-5.92	0.0000	59.40	6.126	513.92	412.6	0.2521	1.40021	0.0000285	25.83	0.001	0.0000
FS24	VaporIN.Fl_O	25.84	6.403	520.77	-7.02	0.0000	59.43	6.125	514.22	412.6	0.2523	1.40018	0.0002323	25.83	0.006	0.0002
FS25	Bleed2.Fl_O	23.25	6.403	520.77	-7.02	0.0000	53.48	6.180	515.53	412.6	0.2253	1.40018	0.0002323	23.25	0.005	0.0002
FS3	HPC.Fl_O	22.13	38.693	943.36	95.55	0.0000	11.33	34.090	910.72	49.7	0.4313	1.38409	0.0002323	22.12	0.005	0.0002
FS36	Bleed3.Fl_O	17.15	38.693	943.36	95.55	0.0000	8.78	36.049	924.99	49.3	0.3213	1.38409	0.0002323	17.14	0.004	0.0002
FS4	Burner.Fl_O	17.33	37.802	1667.78	83.45	0.0107	12.08	35.696	1643.97	74.6	0.2941	1.33411	0.0002323	17.14	0.004	0.0132
FS45	HPT.Fl_O	23.17	9.183	1101.44	-15.86	0.0080	54.02	8.342	1073.22	265.4	0.3770	1.36878	0.0002323	22.98	0.005	0.0100
FS49	LPT.Fl_O	23.44	3.309	873.50	-71.37	0.0079	135.07	3.137	860.67	860.2	0.2789	1.38289	0.0002323	23.25	0.005	0.0099
FS5	TEGV.Fl_O	23.44	3.309	873.57	-71.37	0.0079	135.07	3.137	860.74	860.2	0.2789	1.38288	0.0002323	23.25	0.005	0.0099
FS8	Core_Nozz.Fl_O	23.44	3.309	873.65	-71.37	0.0079	135.08	2.947	845.99	613.4	0.4128	1.38288	0.0002323	23.25	0.005	0.0099
FS17	FanDuctLkg.Fl_O	224.48	4.707	468.13	-18.46	0.0000	665.90	3.972	445.95	2606.7	0.4981	1.40077	0.0000285	224.47	0.006	0.0000
FS171	Bleed15.Fl_O	227.06	4.707	468.73	-18.33	0.0000	674.00	3.848	442.47	2481.9	0.5441	1.40077	0.0000308	227.06	0.007	0.0000
FS172	FanDuct.Fl_O	227.06	4.707	468.73	-18.33	0.0000	674.00	3.848	442.47	2481.9	0.5441	1.40077	0.0000308	227.06	0.007	0.0000
FS173	Byp_Nozz.Fl_O	227.06	4.707	468.73	-18.33	0.0000	674.00	2.947	409.94	2006.9	0.8457	1.40077	0.0000308	227.06	0.007	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	733.02	1.121	0.9043	2498.137	1.0367	0.9059	-1260.4	2272.33	54.77
LPC	84.35	1.525	0.8404	2498.137	1.1526	0.8496	-603.6	6.76	3.33
HPC	53.48	6.043	0.8178	8941.494	1.8115	0.8566	-3292.8	61.00	57.62
HPT	12.08	4.116	0.8727	219.391	1.3628	0.8500	3292.8		
LPT	54.02	2.775	0.8452	70.235	1.2589	0.8254	1864.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	851.70	1.118	0.9062	2474.317	0.0412	0.8607	1.0235	0.9980	0.9905
LPC	70.87	1.491	0.7766	0.660	0.0000	1.1901	1.0693	1.0822	0.0003
HPC	48.64	5.806	0.8263	8703.120	11.0050	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.030	0.8726	1.319	4.0300	12.6299	0.9723	1.0000	0.0003
LPT	0.83	2.335	0.8515	0.790	2.3350	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2556.86	5625.8

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2789	860.21
FanDuct	0.0000	0.5441	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.6897	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8959.6	1930.2	3292.8
LP_Shaft	2330.9	4200.0	1864.0

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	0.8558	733.64	44.27	9.183
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.2721	733.64	44.27	3.309
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	712.46	39.14	13.507
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	843.21	70.94	26.423
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	712.46	39.14	13.507
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	943.36	95.55	38.693
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	712.46	39.14	13.507

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1000	1.0000	1.0000	2.5838	520.77	-7.02	6.403
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	2.6552	943.36	95.55	37.802
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.3233	943.36	95.55	21.432
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	943.36	95.55	38.693
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	943.36	95.55	38.693
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	943.36	95.55	38.693
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	468.13	-18.46	4.707
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	468.13	-18.46	4.707
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	468.13	-18.46	4.707
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	468.13	-18.46	4.707

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1667.71	0.9995	0.0230	0.18283	0.01066

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.123	0.9801	1.0000	0.9800	613.40	0.413	573.5	417.8
Byp_Nozz	1.597	0.9800	1.0000	0.9800	2006.86	0.846	823.0	5807.9

```
**********************************************************************************************************************************
Date:05/13/13    Time:09:36:22    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 10/ 24/ 1/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 454.76    Stator 1 exit: 461.53    Stator 2 inlet: 470.02    Stator 2 exit: 474.35
            Stator 3 inlet: 483.10    Stator 3 exit: 487.02    Stator 4 inlet: 495.21    Stator 4 exit: 498.53
            Stator 5 inlet: 505.24    Stator 5 exit: 508.12            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.40
Fan Bypass Relative Humidity       1.75
LPC Inlet Relative Humidity        1.56
LPC Exit Relative Humidity         0.15
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          707.26    Fan/LPC Inlet Flow Velocity        178.63
Ambient Static Pressure          3.09    Fan/LPC Inlet Static Pressure        4.25
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   447.02
Additional Water at LPC Exit   0.0001836
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.714	37357.0	18.00	257.07	615.0	1.0895	670.02	8.7284	707.26	9.092	0.772	10.000	1657.8	1566.8	1091.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	257.07	4.339	449.68	-22.87	0.0000	810.63	3.088	407.97	2561.5	0.7140	1.40090	0.0000272	257.06	0.007	0.0000
FS1	Inlet.Fl_O	257.07	4.339	449.68	-22.87	0.0000	810.63	3.981	438.71	4168.2	0.3530	1.40090	0.0000272	257.06	0.007	0.0000
FS12	Splitter.Fl_02	230.64	4.337	449.68	-22.87	0.0000	727.67	3.930	437.15	3531.8	0.3780	1.40090	0.0000272	230.64	0.006	0.0000
FS2	Splitter.Fl_01	26.42	4.337	449.68	-22.87	0.0000	83.37	4.248	447.02	830.5	0.1723	1.40090	0.0000272	26.42	0.001	0.0000
FS14	Fan.Fl_O	230.64	4.849	465.80	-19.01	0.0000	662.47	4.102	444.04	2606.7	0.4945	1.40079	0.0000272	230.64	0.006	0.0000
FS23	LPC.Fl_O	26.42	6.558	516.85	-6.77	0.0000	59.11	6.277	510.42	412.6	0.2508	1.40025	0.0000272	26.42	0.001	0.0000
FS24	VaporIN.Fl_O	26.43	6.558	517.13	-7.76	0.0000	59.14	6.277	510.70	412.6	0.2509	1.40023	0.0002108	26.42	0.006	0.0002
FS25	Bleed2.Fl_O	23.79	6.558	517.13	-7.76	0.0000	53.22	6.333	511.98	412.6	0.2241	1.40023	0.0002108	23.78	0.005	0.0002
FS3	HPC.Fl_O	22.63	39.454	935.85	93.82	0.0000	11.32	34.770	903.51	49.7	0.4308	1.38453	0.0002108	22.63	0.005	0.0002
FS36	Bleed3.Fl_O	17.54	39.454	935.85	93.82	0.0000	8.78	36.763	917.65	49.3	0.3209	1.38453	0.0002108	17.54	0.004	0.0002
FS4	Burner.Fl_O	17.73	38.545	1657.84	81.79	0.0106	12.08	36.398	1634.13	74.6	0.2940	1.33463	0.0002108	17.54	0.004	0.0132
FS45	HPT.Fl_O	23.69	9.404	1095.40	-16.56	0.0079	53.81	8.550	1067.57	265.4	0.3752	1.36921	0.0002108	23.50	0.005	0.0099
FS49	LPT.Fl_O	23.97	3.450	872.52	-70.78	0.0078	132.45	3.278	860.23	860.2	0.2730	1.38297	0.0002108	23.78	0.005	0.0098
FS5	TEGV.Fl_O	23.97	3.450	872.59	-70.78	0.0078	132.46	3.278	860.30	860.2	0.2730	1.38296	0.0002108	23.78	0.005	0.0098
FS8	Core_Nozz.Fl_O	23.97	3.450	872.66	-70.78	0.0078	132.46	3.088	846.30	613.4	0.4029	1.38296	0.0002108	23.78	0.005	0.0098
FS17	FanDuctLkg.Fl_O	230.64	4.849	465.80	-19.01	0.0000	662.47	4.102	444.04	2606.7	0.4945	1.40079	0.0000272	230.64	0.006	0.0000
FS171	Bleed15.Fl_O	233.28	4.849	466.38	-18.88	0.0000	670.48	3.976	440.64	2481.9	0.5399	1.40078	0.0000293	233.28	0.007	0.0000
FS172	FanDuct.Fl_O	233.28	4.849	466.38	-18.88	0.0000	670.48	3.976	440.64	2481.9	0.5399	1.40078	0.0000293	233.28	0.007	0.0000
FS173	Byp_Nozz.Fl_O	233.28	4.849	466.38	-18.88	0.0000	670.48	3.088	409.90	2006.9	0.8290	1.40078	0.0000293	233.28	0.007	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	727.67	1.118	0.9040	2472.757	1.0359	0.9055	-1260.7	2671.86	54.68
LPC	83.37	1.512	0.8405	2472.757	1.1494	0.8495	-602.0	6.67	3.26
HPC	53.22	6.016	0.8174	8932.984	1.8097	0.8562	-3335.8	61.05	57.64
HPT	12.08	4.099	0.8721	219.069	1.3617	0.8494	3335.8		
LPT	53.81	2.726	0.8431	69.567	1.2534	0.8234	1862.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	845.48	1.115	0.9058	2449.180	0.0412	0.8607	1.0235	0.9980	0.9905
LPC	69.77	1.479	0.7754	0.653	0.0000	1.1947	1.0683	1.0839	0.0003
HPC	48.41	5.780	0.8259	8694.837	11.0051	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.013	0.8721	1.317	4.0129	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.298	0.8494	0.783	2.2982	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2561.52	5650.9

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2730	860.21
FanDuct	0.0000	0.5399	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7284	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8919.7	1964.2	3335.8
LP_Shaft	2302.4	4249.0	1862.7

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8753	728.01	43.03	9.404
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2783	728.01	43.03	3.450
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	707.03	37.95	13.795
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	836.58	69.44	26.954
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	707.03	37.95	13.795
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	935.85	93.82	39.454
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	707.03	37.95	13.795

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6429	517.13	-7.76	6.558
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.7159	935.85	93.82	38.545
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3765	935.85	93.82	21.877
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	935.85	93.82	39.454
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	935.85	93.82	39.454
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	935.85	93.82	39.454
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	465.80	-19.01	4.849
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	465.80	-19.01	4.849
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	465.80	-19.01	4.849
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	465.80	-19.01	4.849

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1657.78	0.9995	0.0230	0.18612	0.01061

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.117	0.9801	1.0000	0.9800	613.40	0.403	559.9	417.2
Byp_Nozz	1.570	0.9800	1.0000	0.9800	2006.86	0.829	806.6	5848.7

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Date:05/13/13 Time:09:36:36 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 10/ 24/ 1/ 8 Run by: Philip C Jorgenson PC: 10
Temperature Stator 1 inlet: 456.41 Stator 1 exit: 462.77 Stator 2 inlet: 470.74 Stator 2 exit: 474.79
Stator 3 inlet: 483.00 Stator 3 exit: 486.65 Stator 4 inlet: 494.33 Stator 4 exit: 497.40
Stator 5 inlet: 503.68 Stator 5 exit: 506.34 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.00		
Fan Bypass Relative Humidity	2.26		
LPC Inlet Relative Humidity	2.00		
LPC Exit Relative Humidity	0.22		
HPC Relative Humidity	0.00		
Drop Diameter	0.0000250	Inlet Length	40.00
Ambient Flow Velocity	667.90	Fan/LPC Inlet Flow Velocity	173.00
Ambient Static Pressure	3.58	Fan/LPC Inlet Static Pressure	4.74
Ambient Static Temperature	414.42	Fan/LPC Inlet Static Temperature	449.11
Additional Water at LPC Exit	0.0001599		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.669	34281.0	18.00	278.58	670.2	1.0732	719.20	8.8101	667.90	8.757	0.795	10.000	1650.9	1559.9	1088.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	278.58	4.831	451.61	-22.45	0.0000	790.76	3.578	414.42	2577.4	0.6690	1.40088	0.0000348	278.57	0.010	0.0000
FS1	Inlet.Fl_O	278.58	4.831	451.61	-22.45	0.0000	790.76	4.453	441.21	4168.2	0.3430	1.40088	0.0000348	278.57	0.010	0.0000
FS12	Splitter.Fl_02	250.18	4.829	451.61	-22.45	0.0000	710.51	4.398	439.71	3531.8	0.3674	1.40088	0.0000348	250.18	0.009	0.0000
FS2	Splitter.Fl_01	28.40	4.829	451.61	-22.45	0.0000	80.65	4.736	449.11	830.5	0.1665	1.40088	0.0000348	28.40	0.001	0.0000
FS14	Fan.Fl_O	250.18	5.360	466.78	-18.82	0.0000	650.69	4.571	445.98	2606.7	0.4824	1.40078	0.0000348	250.18	0.009	0.0000
FS23	LPC.Fl_O	28.40	7.123	514.73	-7.33	0.0000	58.37	6.826	508.50	412.6	0.2474	1.40028	0.0000348	28.40	0.001	0.0000
FS24	VaporIN.Fl_O	28.40	7.123	514.98	-8.19	0.0000	58.39	6.826	508.74	412.6	0.2475	1.40026	0.0001947	28.40	0.006	0.0002
FS25	Bleed2.Fl_O	25.56	7.123	514.98	-8.19	0.0000	52.55	6.884	509.99	412.6	0.2211	1.40026	0.0001947	25.56	0.005	0.0002
FS3	HPC.Fl_O	24.32	42.307	928.99	92.22	0.0000	11.31	37.302	896.99	49.7	0.4299	1.38493	0.0001947	24.32	0.005	0.0002
FS36	Bleed3.Fl_O	18.85	42.307	928.99	92.22	0.0000	8.76	39.431	910.97	49.3	0.3203	1.38493	0.0001947	18.85	0.004	0.0002
FS4	Burner.Fl_O	19.05	41.333	1650.94	80.22	0.0106	12.08	39.030	1627.32	74.6	0.2940	1.33498	0.0001947	18.85	0.004	0.0131
FS45	HPT.Fl_O	25.46	10.193	1092.77	-16.96	0.0079	53.29	9.287	1065.63	265.4	0.3708	1.36939	0.0001947	25.26	0.005	0.0099
FS49	LPT.Fl_O	25.76	3.942	881.65	-68.26	0.0078	125.23	3.767	870.65	860.2	0.2569	1.38247	0.0001947	25.56	0.005	0.0098
FS5	TEGV.Fl_O	25.76	3.942	881.72	-68.26	0.0078	125.23	3.767	870.72	860.2	0.2569	1.38246	0.0001947	25.56	0.005	0.0098
FS8	Core_Nozz.Fl_O	25.76	3.942	881.79	-68.26	0.0078	125.24	3.578	858.47	613.3	0.3765	1.38246	0.0001947	25.56	0.005	0.0098
FS17	FanDuctLkg.Fl_O	250.18	5.360	466.78	-18.82	0.0000	650.69	4.571	445.98	2606.7	0.4824	1.40078	0.0000348	250.18	0.009	0.0000
FS171	Bleed15.Fl_O	253.02	5.360	467.32	-18.70	0.0000	658.46	4.440	442.80	2481.9	0.5257	1.40078	0.0000366	253.02	0.009	0.0000
FS172	FanDuct.Fl_O	253.02	5.360	467.32	-18.70	0.0000	658.46	4.440	442.80	2481.9	0.5257	1.40078	0.0000366	253.02	0.009	0.0000
FS173	Byp_Nozz.Fl_O	253.02	5.360	467.32	-18.70	0.0000	658.46	3.578	416.27	2006.9	0.7821	1.40078	0.0000366	253.02	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	710.51	1.110	0.9032	2396.066	1.0336	0.9046	-1286.9	5760.24	54.20
LPC	80.65	1.475	0.8415	2396.066	1.1398	0.8500	-607.9	6.41	3.05
HPC	52.55	5.940	0.8161	8910.957	1.8039	0.8550	-3543.2	61.35	57.86
HPT	12.08	4.055	0.8716	218.528	1.3585	0.8490	3543.3		
LPT	53.29	2.586	0.8386	67.635	1.2372	0.8196	1894.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	825.54	1.108	0.9050	2373.220	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	66.45	1.445	0.7718	0.633	0.0000	1.2136	1.0675	1.0903	0.0003
HPC	47.79	5.707	0.8245	8673.396	10.9953	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.970	0.8716	1.313	3.9704	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.193	0.8448	0.761	2.1929	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2577.44	5783.1

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2569	860.21
FanDuct	0.0000	0.5257	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8101	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8879.2	2095.9	3543.3
LP_Shaft	2235.8	4450.8	1894.7

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9407	723.45	42.01	10.193
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2991	723.45	42.01	3.942
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.70	36.99	14.863
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	830.81	68.12	28.937
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.70	36.99	14.863
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	928.99	92.22	42.307
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.70	36.99	14.863

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.8402	514.98	-8.19	7.123
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.9186	928.99	92.22	41.333
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.5539	928.99	92.22	23.521
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	928.99	92.22	42.307
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	928.99	92.22	42.307
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	928.99	92.22	42.307
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	466.78	-18.82	5.360
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	466.78	-18.82	5.360
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	466.78	-18.82	5.360
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	466.78	-18.82	5.360

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1650.87	0.9995	0.0230	0.19978	0.01060

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.102	0.9801	1.0000	0.9800	613.40	0.377	526.9	421.9
Byp_Nozz	1.498	0.9800	1.0000	0.9800	2006.86	0.782	766.9	6031.3

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Date:05/13/13 Time:09:36:53 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 13/ 27/ 1/11 Run by: Philip C Jorgenson PC: 10
Temperature Stator 1 inlet: 465.05 Stator 1 exit: 470.56 Stator 2 inlet: 477.38 Stator 2 exit: 480.67
Stator 3 inlet: 487.80 Stator 3 exit: 490.69 Stator 4 inlet: 497.40 Stator 4 exit: 499.79
Stator 5 inlet: 505.19 Stator 5 exit: 507.21 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.96		
Fan Bypass Relative Humidity	3.12		
LPC Inlet Relative Humidity	2.83		
LPC Exit Relative Humidity	0.47		
HPC Relative Humidity	0.00		
Drop Diameter	0.0000250	Inlet Length	40.00
Ambient Flow Velocity	617.99	Fan/LPC Inlet Flow Velocity	174.95
Ambient Static Pressure	4.36	Fan/LPC Inlet Static Pressure	5.49
Ambient Static Temperature	429.58	Fan/LPC Inlet Static Temperature	458.87
Additional Water at LPC Exit	0.0001731		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.608	30029.0	18.00	305.10	729.6	1.0759	784.96	8.3732	617.99	8.197	0.828	10.000	1655.4	1563.6	1094.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	305.10	5.595	461.42	-20.30	0.0000	755.84	4.358	429.58	2596.2	0.6080	1.40081	0.0000681	305.08	0.021	0.0001
FS1	Inlet.Fl_O	305.10	5.595	461.42	-20.30	0.0000	755.84	5.199	451.82	4168.2	0.3256	1.40081	0.0000681	305.08	0.021	0.0001
FS12	Splitter.Fl_02	272.55	5.592	461.42	-20.30	0.0000	675.54	5.147	450.59	3531.8	0.3463	1.40081	0.0000681	272.54	0.019	0.0001
FS2	Splitter.Fl_01	32.55	5.592	461.42	-20.30	0.0000	80.68	5.485	458.87	830.5	0.1665	1.40081	0.0000681	32.55	0.002	0.0001
FS14	Fan.Fl_O	272.55	6.139	475.25	-16.98	0.0000	624.52	5.321	456.19	2606.7	0.4566	1.40070	0.0000681	272.54	0.019	0.0001
FS23	LPC.Fl_O	32.55	7.827	515.86	-7.25	0.0000	60.96	7.469	509.01	412.6	0.2593	1.40026	0.0000681	32.55	0.002	0.0001
FS24	VaporIN.Fl_O	32.56	7.827	516.13	-8.18	0.0000	60.98	7.469	509.27	412.6	0.2594	1.40023	0.0002412	32.55	0.008	0.0002
FS25	Bleed2.Fl_O	27.67	7.827	516.13	-8.18	0.0000	51.83	7.572	511.27	412.6	0.2179	1.40023	0.0002412	27.67	0.007	0.0002
FS3	HPC.Fl_O	26.33	45.865	927.80	91.66	0.0000	11.28	40.465	896.00	49.7	0.4288	1.38500	0.0002412	26.32	0.006	0.0002
FS36	Bleed3.Fl_O	20.41	45.865	927.80	91.66	0.0000	8.75	42.761	909.89	49.3	0.3196	1.38500	0.0002412	20.40	0.005	0.0002
FS4	Burner.Fl_O	20.62	44.809	1655.36	79.58	0.0107	12.08	42.312	1631.67	74.6	0.2941	1.33469	0.0002412	20.40	0.005	0.0133
FS45	HPT.Fl_O	27.57	11.203	1098.36	-17.02	0.0080	52.62	10.235	1071.87	265.4	0.3654	1.36897	0.0002412	27.34	0.007	0.0100
FS49	LPT.Fl_O	27.89	4.717	904.83	-63.97	0.0079	114.78	4.543	895.48	860.2	0.2340	1.38109	0.0002412	27.67	0.007	0.0099
FS5	TEGV.Fl_O	27.89	4.717	904.90	-63.97	0.0079	114.78	4.543	895.55	860.2	0.2340	1.38108	0.0002412	27.67	0.007	0.0099
FS8	Core_Nozz.Fl_O	27.89	4.717	904.98	-63.97	0.0079	114.79	4.358	885.44	613.4	0.3400	1.38108	0.0002412	27.67	0.007	0.0099
FS17	FanDuctLkg.Fl_O	272.55	6.139	475.25	-16.98	0.0000	624.52	5.321	456.19	2606.7	0.4566	1.40070	0.0000681	272.54	0.019	0.0001
FS171	Bleed15.Fl_O	277.44	6.139	475.97	-16.83	0.0000	636.19	5.173	453.22	2481.9	0.5005	1.40070	0.0000711	277.42	0.020	0.0001
FS172	FanDuct.Fl_O	277.44	6.139	475.97	-16.83	0.0000	636.19	5.173	453.22	2481.9	0.5005	1.40070	0.0000711	277.42	0.020	0.0001
FS173	Byp_Nozz.Fl_O	277.44	6.139	475.97	-16.83	0.0000	636.19	4.358	431.52	2006.9	0.7169	1.40070	0.0000711	277.42	0.020	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	675.54	1.098	0.9021	2249.745	1.0300	0.9034	-1278.8	-9339.51	52.72
LPC	80.68	1.399	0.8551	2249.745	1.1180	0.8618	-601.1	5.96	2.63
HPC	51.83	5.860	0.8147	8887.483	1.7976	0.8536	-3814.3	61.61	58.04
HPT	12.08	4.000	0.8718	217.906	1.3543	0.8495	3814.3		
LPT	52.62	2.375	0.8304	64.027	1.2114	0.8125	1879.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	784.91	1.096	0.9040	2228.294	0.0416	0.8607	1.0235	0.9980	0.9905
LPC	60.33	1.382	0.7655	0.594	0.0000	1.3372	1.0459	1.1170	0.0003
HPC	47.14	5.631	0.8231	8650.549	10.9883	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.917	0.8718	1.310	3.9166	12.6299	0.9723	1.0000	0.0003
LPT	0.81	2.034	0.8365	0.720	2.0342	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2596.24	5860.4

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2340	860.21
FanDuct	0.0000	0.5005	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.3732	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8865.7	2259.6	3814.3
LP_Shaft	2121.9	4653.1	1879.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0184	723.42	41.74	11.203
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3238	723.42	41.74	4.717
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.79	36.75	16.195
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	830.18	67.70	31.410
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.79	36.75	16.195
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	927.80	91.66	45.865
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.79	36.75	16.195

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1500	1.0000	1.0000	4.8835	516.13	-8.18	7.827
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.1597	927.80	91.66	44.809
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.7648	927.80	91.66	25.586
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	927.80	91.66	45.865
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	927.80	91.66	45.865
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	927.80	91.66	45.865
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	475.25	-16.98	6.139
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.25	-16.98	6.139
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	475.25	-16.98	6.139
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.25	-16.98	6.139

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1655.29	0.9995	0.0230	0.21804	0.01069

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.082	0.9801	1.0000	0.9800	613.40	0.340	483.0	418.7
Byp_Nozz	1.409	0.9800	1.0000	0.9800	2006.86	0.717	715.7	6171.3

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**********************************************************************************************************************************
Date:05/13/13    Time:09:37:15    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 22/ 36/ 1/20    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 473.11    Stator 1 exit: 477.18    Stator 2 inlet: 481.79    Stator 2 exit: 483.59
            Stator 3 inlet: 488.73    Stator 3 exit: 490.13    Stator 4 inlet: 495.05    Stator 4 exit: 496.05
            Stator 5 inlet: 499.65    Stator 5 exit: 500.37            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.82
Fan Bypass Relative Humidity       3.94
LPC Inlet Relative Humidity        3.82
LPC Exit Relative Humidity         1.19
HPC Relative Humidity              0.01
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity           571.13    Fan/LPC Inlet Flow Velocity        194.52
Ambient Static Pressure           5.30    Fan/LPC Inlet Static Pressure        6.36
Ambient Static Temperature      445.14    Fan/LPC Inlet Static Temperature   469.17
Additional Water at LPC Exit    0.0001671
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.552	25666.0	18.00	330.55	749.0	1.1186	837.85	7.0509	571.13	7.335	0.859	10.000	1666.1	1572.0	1105.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	330.55	6.516	472.33	-18.03	0.0000	711.40	5.297	445.14	2595.1	0.5520	1.40072	0.0001274	330.51	0.042	0.0001
FS1	Inlet.Fl_O	330.55	6.516	472.33	-18.03	0.0000	711.40	6.111	463.74	4168.2	0.3040	1.40072	0.0001274	330.51	0.042	0.0001
FS12	Splitter.Fl_02	289.49	6.513	472.33	-18.03	0.0000	623.35	6.078	463.07	3531.8	0.3158	1.40072	0.0001274	289.45	0.037	0.0001
FS2	Splitter.Fl_01	41.06	6.513	472.33	-18.03	0.0000	88.41	6.362	469.17	830.5	0.1831	1.40072	0.0001274	41.05	0.005	0.0001
FS14	Fan.Fl_O	289.49	7.057	484.46	-15.12	0.0000	582.64	6.258	468.10	2606.7	0.4178	1.40061	0.0001274	289.45	0.037	0.0001
FS23	LPC.Fl_O	41.06	8.207	511.60	-8.61	0.0000	73.02	7.656	501.53	412.6	0.3167	1.40031	0.0001274	41.05	0.005	0.0001
FS24	VaporIN.Fl_O	41.06	8.207	511.87	-9.51	0.0000	73.05	7.655	501.78	412.6	0.3169	1.40028	0.0002944	41.05	0.012	0.0003
FS25	Bleed2.Fl_O	28.75	8.207	511.87	-9.51	0.0000	51.13	7.947	507.18	412.6	0.2148	1.40028	0.0002944	28.74	0.008	0.0003
FS3	HPC.Fl_O	27.35	47.796	918.91	89.17	0.0000	11.19	42.274	888.00	49.7	0.4244	1.38550	0.0002944	27.34	0.008	0.0003
FS36	Bleed3.Fl_O	21.20	47.796	918.91	89.17	0.0000	8.67	44.618	901.47	49.3	0.3166	1.38550	0.0002944	21.19	0.006	0.0003
FS4	Burner.Fl_O	21.43	46.696	1666.06	76.78	0.0110	12.09	44.092	1642.26	74.6	0.2942	1.33397	0.0002944	21.19	0.006	0.0137
FS45	HPT.Fl_O	28.64	12.031	1109.70	-18.56	0.0082	51.18	11.053	1084.65	265.4	0.3538	1.36807	0.0002944	28.40	0.008	0.0103
FS49	LPT.Fl_O	28.98	5.626	937.29	-60.29	0.0081	101.75	5.464	929.80	860.2	0.2061	1.37901	0.0002944	28.74	0.008	0.0102
FS5	TEGV.Fl_O	28.98	5.626	937.36	-60.29	0.0081	101.76	5.464	929.87	860.2	0.2061	1.37901	0.0002944	28.74	0.008	0.0102
FS8	Core_Nozz.Fl_O	28.98	5.626	937.44	-60.29	0.0081	101.76	5.297	922.01	613.4	0.2969	1.37900	0.0002944	28.74	0.008	0.0102
FS17	FanDuctLkg.Fl_O	289.49	7.057	484.46	-15.12	0.0000	582.64	6.258	468.10	2606.7	0.4178	1.40061	0.0001274	289.45	0.037	0.0001
FS171	Bleed15.Fl_O	301.81	7.057	485.58	-14.89	0.0000	608.14	6.064	464.96	2481.9	0.4705	1.40060	0.0001342	301.77	0.040	0.0001
FS172	FanDuct.Fl_O	301.81	7.057	485.58	-14.89	0.0000	608.14	6.064	464.96	2481.9	0.4705	1.40060	0.0001342	301.77	0.040	0.0001
FS173	Byp_Nozz.Fl_O	301.81	7.057	485.58	-14.89	0.0000	608.14	5.297	447.32	2006.9	0.6533	1.40060	0.0001342	301.77	0.040	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	623.35	1.084	0.9032	2044.928	1.0257	0.9043	-1191.7	-2768.59	49.88
LPC	88.41	1.260	0.8219	2044.928	1.0832	0.8277	-547.1	6.38	2.41
HPC	51.13	5.824	0.8139	8865.652	1.7952	0.8529	-3915.9	60.73	57.11
HPT	12.09	3.881	0.8732	215.773	1.3456	0.8517	3915.9		
LPT	51.18	2.138	0.8211	58.580	1.1810	0.8048	1738.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	724.27	1.082	0.9050	2025.429	0.0425	0.8607	1.0235	0.9980	0.9905
LPC	53.48	1.311	0.7608	0.540	0.0000	1.6530	0.8357	1.0804	0.0003
HPC	46.51	5.597	0.8223	8629.300	11.0513	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.802	0.8732	1.297	3.8015	12.6299	0.9723	1.0000	0.0003
LPT	0.78	1.856	0.8272	0.659	1.8562	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2595.09	5867.7
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2061	860.21
FanDuct	0.0000	0.4705	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.0509	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8807.3	2335.2	3915.9
LP_Shaft	1951.4	4679.6	1738.7

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0578	716.78	39.83	12.031
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3363	716.78	39.83	5.626
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	696.38	34.89	16.917
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	822.34	65.48	32.752
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	696.38	34.89	16.917
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	918.91	89.17	47.796
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	696.38	34.89	16.917

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.3000	1.0000	1.0000	12.3194	511.87	-9.51	8.207
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.2821	918.91	89.17	46.696
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.8719	918.91	89.17	26.867
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	918.91	89.17	47.796
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	918.91	89.17	47.796
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	918.91	89.17	47.796
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	484.46	-15.12	7.057
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	484.46	-15.12	7.057
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	484.46	-15.12	7.057
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	484.46	-15.12	7.057

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1666.00	0.9995	0.0230	0.23274	0.01098

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.062	0.9801	1.0000	0.9800	613.40	0.297	430.0	387.3
Byp_Nozz	1.332	0.9800	1.0000	0.9800	2006.86	0.653	664.1	6229.4

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**********************************************************************************************************************************
Date:05/13/13    Time:09:37:48    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 28/ 56/ 2/25    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 486.26    Stator 1 exit: 489.21    Stator 2 inlet: 491.95    Stator 2 exit: 492.71
            Stator 3 inlet: 496.04    Stator 3 exit: 496.37    Stator 4 inlet: 499.61    Stator 4 exit: 499.64
            Stator 5 inlet: 501.49    Stator 5 exit: 501.32            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.85
Fan Bypass Relative Humidity       4.91
LPC Inlet Relative Humidity        5.02
LPC Exit Relative Humidity         2.62
HPC Relative Humidity              0.01
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          518.26    Fan/LPC Inlet Flow Velocity        204.30
Ambient Static Pressure          6.74    Fan/LPC Inlet Static Pressure        7.74
Ambient Static Temperature     465.18    Fan/LPC Inlet Static Temperature   484.08
Additional Water at LPC Exit   0.0001863
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.490	20047.0	18.00	368.15	832.5	1.1207	932.96	6.2384	518.26	6.454	0.890	10.000	1699.1	1601.1	1136.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	368.15	7.943	487.56	-15.16	0.0000	660.38	6.740	465.18	2616.0	0.4900	1.40057	0.0002627	368.06	0.097	0.0003
FS1	Inlet.Fl_O	368.15	7.943	487.56	-15.16	0.0000	660.38	7.522	480.02	4168.2	0.2799	1.40057	0.0002627	368.06	0.097	0.0003
FS12	Splitter.Fl_02	317.29	7.939	487.56	-15.16	0.0000	569.43	7.503	479.73	3531.8	0.2854	1.40057	0.0002627	317.21	0.083	0.0003
FS2	Splitter.Fl_01	50.86	7.939	487.56	-15.16	0.0000	91.28	7.743	484.08	830.5	0.1894	1.40057	0.0002627	50.85	0.013	0.0003
FS14	Fan.Fl_O	317.29	8.512	498.39	-12.56	0.0000	536.98	7.712	484.52	2606.7	0.3780	1.40045	0.0002627	317.21	0.083	0.0003
FS23	LPC.Fl_O	50.86	9.079	515.20	-8.53	0.0000	82.05	8.291	501.99	412.6	0.3625	1.40024	0.0002627	50.85	0.013	0.0003
FS24	VaporIN.Fl_O	50.87	9.079	515.49	-9.53	0.0000	82.09	8.290	502.26	412.6	0.3627	1.40021	0.0004491	50.85	0.023	0.0004
FS25	Bleed2.Fl_O	30.52	9.079	515.49	-9.53	0.0000	49.25	8.813	511.12	412.6	0.2065	1.40021	0.0004491	30.51	0.014	0.0004
FS3	HPC.Fl_O	29.04	51.266	918.25	88.12	0.0000	11.08	45.484	888.13	49.7	0.4188	1.38552	0.0004491	29.03	0.013	0.0004
FS36	Bleed3.Fl_O	22.51	51.266	918.25	88.12	0.0000	8.58	47.932	901.21	49.3	0.3129	1.38552	0.0004491	22.50	0.010	0.0004
FS4	Burner.Fl_O	22.77	50.085	1699.12	75.15	0.0115	12.09	47.290	1674.93	74.6	0.2946	1.33200	0.0004491	22.50	0.010	0.0145
FS45	HPT.Fl_O	30.42	13.553	1140.71	-18.98	0.0086	48.92	12.556	1117.56	265.4	0.3361	1.36576	0.0004491	30.15	0.014	0.0110
FS49	LPT.Fl_O	30.78	7.047	987.36	-56.04	0.0085	88.56	6.895	981.49	860.2	0.1785	1.37568	0.0004491	30.51	0.014	0.0108
FS5	TEGV.Fl_O	30.78	7.047	987.44	-56.04	0.0085	88.57	6.895	981.56	860.2	0.1785	1.37567	0.0004491	30.51	0.014	0.0108
FS8	Core_Nozz.Fl_O	30.78	7.047	987.51	-56.04	0.0085	88.57	6.740	975.55	613.4	0.2553	1.37567	0.0004491	30.51	0.014	0.0108
FS17	FanDuctLkg.Fl_O	317.29	8.512	498.39	-12.56	0.0000	536.98	7.712	484.52	2606.7	0.3780	1.40045	0.0002627	317.21	0.083	0.0003
FS171	Bleed15.Fl_O	337.64	8.512	499.42	-12.38	0.0000	572.01	7.477	481.24	2481.9	0.4343	1.40044	0.0002740	337.55	0.092	0.0003
FS172	FanDuct.Fl_O	337.64	8.512	499.42	-12.38	0.0000	572.01	7.477	481.24	2481.9	0.4343	1.40044	0.0002740	337.55	0.092	0.0003
FS173	Byp_Nozz.Fl_O	337.64	8.512	499.42	-12.38	0.0000	572.01	6.740	467.17	2006.9	0.5871	1.40044	0.0002740	337.55	0.092	0.0003

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	569.43	1.072	0.9054	1848.947	1.0222	0.9063	-1166.4	-1882.29	46.42
LPC	91.28	1.144	0.6896	1848.947	1.0567	0.6954	-477.0	6.97	2.19
HPC	49.25	5.647	0.8099	8804.937	1.7813	0.8491	-4115.0	60.55	56.72
HPT	12.09	3.695	0.8753	212.950	1.3307	0.8549	4115.0		
LPT	48.92	1.923	0.8141	53.077	1.1520	0.7998	1643.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	661.62	1.070	0.9072	1831.317	0.0438	0.8607	1.0235	0.9980	0.9905
LPC	47.04	1.247	0.7558	0.488	0.0000	1.9402	0.5807	0.9124	0.0003
HPC	44.80	5.428	0.8182	8570.203	11.0884	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.621	0.8753	1.280	3.6208	12.6299	0.9723	1.0000	0.0003
LPT	0.75	1.694	0.8202	0.597	1.6944	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2616.04	5930.2
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1785	860.21
FanDuct	0.0000	0.4343	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.2384	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8777.9	2462.2	4115.0
LP_Shaft	1792.6	4815.1	1643.5

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.1232	718.23	39.29	13.553
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3571	718.23	39.29	7.047
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	698.05	34.41	18.360
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	822.69	64.69	35.235
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	698.05	34.41	18.360
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	918.25	88.12	51.266
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	698.05	34.41	18.360

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.4000	1.0000	1.0000	20.3482	515.49	-9.53	9.079
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.4850	918.25	88.12	50.085
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	3.0495	918.25	88.12	29.189
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	918.25	88.12	51.266
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	918.25	88.12	51.266
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	918.25	88.12	51.266
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	498.39	-12.56	8.512
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	498.39	-12.56	8.512
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	498.39	-12.56	8.512
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	498.39	-12.56	8.512

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1699.06	0.9995	0.0230	0.25915	0.01152

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.046	0.9801	1.0000	0.9800	613.40	0.255	379.8	363.4
Byp_Nozz	1.263	0.9800	1.0000	0.9800	2006.86	0.587	609.8	6399.3

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Date:05/13/13   Time:09:38:20   Model: Turbofan Engine - COMDES ON   converge = 1   CASE: 0

Version:NPSS_1.6.5 - Rev: ->   Gas Package: Janaf   iter/pass/Jacb/Broy= 30/ 58/ 2/27   Run by: Philip C Jorgenson   PC: 10

Temperature Stator 1 inlet: 500.27   Stator 1 exit: 502.63   Stator 2 inlet: 504.94   Stator 2 exit: 505.66

Stator 3 inlet: 508.36   Stator 3 exit: 508.76   Stator 4 inlet: 511.37   Stator 4 exit: 511.54

Stator 5 inlet: 513.13   Stator 5 exit: 513.14   Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	6.53		
Fan Bypass Relative Humidity	5.96		
LPC Inlet Relative Humidity	5.71		
LPC Exit Relative Humidity	3.40		
HPC Relative Humidity	0.02		
Drop Diameter	0.0000250	Inlet Length	40.00
Ambient Flow Velocity	479.99	Fan/LPC Inlet Flow Velocity	173.45
Ambient Static Pressure	8.15	Fan/LPC Inlet Static Pressure	9.18
Ambient Static Temperature	481.63	Fan/LPC Inlet Static Temperature	498.31
Additional Water at LPC Exit	0.0002441		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.446	15435.0	18.00	386.71	642.4	1.3769	884.50	6.7810	479.99	5.289	0.902	10.000	1650.5	1554.6	1125.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	386.71	9.342	500.81	-13.05	0.0000	597.77	8.149	481.63	2541.0	0.4460	1.40040	0.0004484	386.53	0.173	0.0004
FS1	Inlet.Fl_O	386.71	9.342	500.81	-13.05	0.0000	597.77	8.941	494.57	4168.2	0.2511	1.40040	0.0004484	386.53	0.173	0.0004
FS12	Splitter.Fl_02	337.01	9.337	500.81	-13.05	0.0000	521.20	8.912	494.17	3531.8	0.2590	1.40040	0.0004484	336.86	0.151	0.0004
FS2	Splitter.Fl_01	49.70	9.337	500.81	-13.05	0.0000	76.86	9.175	498.31	830.5	0.1585	1.40040	0.0004484	49.68	0.022	0.0004
FS14	Fan.Fl_O	337.01	9.814	508.80	-11.14	0.0000	499.85	9.027	496.79	2606.7	0.3474	1.40030	0.0004484	336.86	0.151	0.0004
FS23	LPC.Fl_O	49.70	10.432	523.19	-7.68	0.0000	70.32	9.786	513.71	412.6	0.3036	1.40011	0.0004484	49.68	0.022	0.0004
FS24	VaporIN.Fl_O	49.71	10.432	523.55	-9.00	0.0000	70.36	9.785	514.06	412.6	0.3038	1.40007	0.0006925	49.68	0.034	0.0007
FS25	Bleed2.Fl_O	29.83	10.432	523.55	-9.00	0.0000	42.21	10.210	520.34	412.6	0.1758	1.40007	0.0006925	29.81	0.021	0.0007
FS3	HPC.Fl_O	28.38	49.407	888.07	79.31	0.0000	11.05	43.872	859.06	49.7	0.4171	1.38717	0.0006925	28.36	0.020	0.0007
FS36	Bleed3.Fl_O	21.99	49.407	888.07	79.31	0.0000	8.56	46.214	871.64	49.3	0.3117	1.38717	0.0006925	21.98	0.015	0.0007
FS4	Burner.Fl_O	22.24	48.269	1650.48	66.82	0.0112	12.08	45.581	1626.90	74.6	0.2940	1.33453	0.0006925	21.98	0.015	0.0143
FS45	HPT.Fl_O	29.72	14.275	1130.53	-18.14	0.0083	45.18	13.391	1111.29	265.4	0.3070	1.36656	0.0006925	29.46	0.020	0.0109
FS49	LPT.Fl_O	30.07	8.396	1006.43	-47.86	0.0082	73.32	8.273	1002.37	860.2	0.1470	1.37460	0.0006925	29.81	0.021	0.0108
FS5	TEGV.Fl_O	30.07	8.396	1006.50	-47.85	0.0082	73.33	8.273	1002.44	860.2	0.1470	1.37460	0.0006925	29.81	0.021	0.0108
FS8	Core_Nozz.Fl_O	30.07	8.396	1006.57	-47.85	0.0082	73.33	8.149	998.41	613.4	0.2088	1.37459	0.0006925	29.81	0.021	0.0108
FS17	FanDuctLkg.Fl_O	337.01	9.814	508.80	-11.14	0.0000	499.85	9.027	496.79	2606.7	0.3474	1.40030	0.0004484	336.86	0.151	0.0004
FS171	Bleed15.Fl_O	356.89	9.814	509.62	-11.02	0.0000	529.77	8.814	494.20	2481.9	0.3947	1.40029	0.0004619	356.73	0.165	0.0005
FS172	FanDuct.Fl_O	356.89	9.814	509.62	-11.02	0.0000	529.77	8.814	494.20	2481.9	0.3947	1.40029	0.0004619	356.73	0.165	0.0005
FS173	Byp_Nozz.Fl_O	356.89	9.814	509.62	-11.02	0.0000	529.77	8.149	483.25	2006.9	0.5221	1.40029	0.0004619	356.73	0.165	0.0005

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	521.20	1.051	0.8983	1610.488	1.0159	0.8990	-913.2	-1525.87	44.72
LPC	76.86	1.117	0.7208	1610.488	1.0447	0.7252	-377.4	8.26	1.96
HPC	42.21	4.736	0.7955	8540.623	1.6962	0.8340	-3636.5	68.26	63.04
HPT	12.08	3.381	0.8666	211.212	1.3031	0.8467	3636.5		
LPT	45.18	1.700	0.8005	47.066	1.1197	0.7882	1290.6		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	605.59	1.050	0.9001	1595.132	0.0442	0.8607	1.0235	0.9980	0.9905
LPC	39.71	1.184	0.7480	0.425	0.0000	1.9357	0.6360	0.9636	0.0003
HPC	38.39	4.560	0.8038	8312.935	10.7596	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.315	0.8666	1.269	3.3155	12.6299	0.9723	1.0000	0.0003
LPT	0.69	1.527	0.8064	0.529	1.5266	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2541.02	5769.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1470	860.21
FanDuct	0.0000	0.3947	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.7810	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8580.7	2225.9	3636.5
LP_Shaft	1582.5	4283.4	1290.6

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0976	706.89	35.15	14.275
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3490	706.89	35.15	8.396
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	688.63	30.74	19.007
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	801.45	58.12	34.597
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	688.63	30.74	19.007
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	888.07	79.31	49.407
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	688.63	30.74	19.007

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.4000	1.0000	1.0000	19.8844	523.55	-9.00	10.432
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.4056	888.07	79.31	48.269
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.9800	888.07	79.31	28.824
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	888.07	79.31	49.407
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	888.07	79.31	49.407
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	888.07	79.31	49.407
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	508.80	-11.14	9.814
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	508.80	-11.14	9.814
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	508.80	-11.14	9.814
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	508.80	-11.14	9.814

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1650.42	0.9995	0.0230	0.24569	0.01118

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.030	0.9802	1.0000	0.9800	613.40	0.209	314.2	293.6
Byp_Nozz	1.204	0.9800	1.0000	0.9800	2006.86	0.522	551.5	6117.8

25µm, ISA +36R

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**********************************************************************************************************************************
Date:05/13/13    Time:10:04:47    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 12/ 26/ 1/10    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 483.68    Stator 1 exit: 491.45    Stator 2 inlet: 501.22    Stator 2 exit: 506.21
            Stator 3 inlet: 516.31    Stator 3 exit: 520.84    Stator 4 inlet: 530.29    Stator 4 exit: 534.15
            Stator 5 inlet: 541.91    Stator 5 exit: 545.29            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.97
Fan Bypass Relative Humidity       1.41
LPC Inlet Relative Humidity        1.30
LPC Exit Relative Humidity         0.13
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        192.84
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   474.82
Additional Water at LPC Exit   0.0004075
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	252.17	619.1	1.1433	707.76	8.5687	789.49	9.519	0.736	10.000	1760.6	1665.7	1159.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	252.17	4.267	477.92	-16.44	0.0000	833.74	2.854	425.97	2543.6	0.7800	1.40068	0.0000851	252.15	0.021	0.0001
FS1	Inlet.Fl_O	252.17	4.267	477.92	-16.44	0.0000	833.74	3.891	465.50	4168.2	0.3649	1.40068	0.0000851	252.15	0.021	0.0001
FS12	Splitter.Fl_02	225.82	4.265	477.92	-16.44	0.0000	746.98	3.839	463.77	3531.8	0.3902	1.40068	0.0000851	225.80	0.019	0.0001
FS2	Splitter.Fl_01	26.35	4.265	477.92	-16.44	0.0000	87.17	4.169	474.82	830.5	0.1805	1.40068	0.0000851	26.35	0.002	0.0001
FS14	Fan.Fl_O	225.82	4.817	496.65	-11.95	0.0000	674.09	4.043	472.35	2606.7	0.5067	1.40049	0.0000851	225.80	0.019	0.0001
FS23	LPC.Fl_O	26.35	6.656	555.11	2.08	0.0000	60.19	6.360	547.94	412.6	0.2558	1.39967	0.0000851	26.35	0.002	0.0001
FS24	VaporIN.Fl_O	26.36	6.656	555.68	-0.13	0.0000	60.25	6.359	548.49	412.6	0.2561	1.39961	0.0004925	26.35	0.013	0.0005
FS25	Bleed2.Fl_O	23.73	6.656	555.68	-0.13	0.0000	54.23	6.418	549.94	412.6	0.2287	1.39961	0.0004925	23.72	0.012	0.0005
FS3	HPC.Fl_O	22.58	40.613	1007.14	109.89	0.0000	11.38	35.728	972.14	49.7	0.4344	1.38021	0.0004925	22.57	0.011	0.0005
FS36	Bleed3.Fl_O	17.50	40.613	1007.14	109.89	0.0000	8.82	37.810	987.47	49.3	0.3234	1.38021	0.0004925	17.49	0.009	0.0005
FS4	Burner.Fl_O	17.69	39.678	1760.56	97.00	0.0112	12.07	37.470	1735.71	74.6	0.2944	1.32934	0.0004925	17.49	0.009	0.0142
FS45	HPT.Fl_O	23.65	9.523	1163.38	-9.52	0.0084	54.66	8.626	1133.00	265.4	0.3830	1.36444	0.0004925	23.44	0.012	0.0107
FS49	LPT.Fl_O	23.92	3.262	910.91	-71.53	0.0083	142.86	3.070	895.85	860.2	0.2971	1.38043	0.0004925	23.72	0.012	0.0106
FS5	TEGV.Fl_O	23.92	3.262	910.98	-71.53	0.0083	142.86	3.070	895.92	860.2	0.2971	1.38043	0.0004925	23.72	0.012	0.0106
FS8	Core_Nozz.Fl_O	23.92	3.262	911.06	-71.53	0.0083	142.87	2.854	878.09	613.4	0.4436	1.38042	0.0004925	23.72	0.012	0.0106
FS17	FanDuctLkg.Fl_O	225.82	4.817	496.65	-11.95	0.0000	674.09	4.043	472.35	2606.7	0.5067	1.40049	0.0000851	225.80	0.019	0.0001
FS171	Bleed15.Fl_O	228.45	4.817	497.33	-11.82	0.0000	682.42	3.909	468.47	2481.9	0.5546	1.40048	0.0000898	228.43	0.021	0.0001
FS172	FanDuct.Fl_O	228.45	4.817	497.33	-11.82	0.0000	682.42	3.909	468.47	2481.9	0.5546	1.40048	0.0000898	228.43	0.021	0.0001
FS173	Byp_Nozz.Fl_O	228.45	4.817	497.33	-11.82	0.0000	682.42	2.854	428.14	2006.9	0.8979	1.40048	0.0000898	228.43	0.021	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	746.98	1.130	0.9055	2568.797	1.0392	0.9071	-1434.2	1605.87	54.82
LPC	87.17	1.561	0.8402	2568.797	1.1615	0.8499	-690.4	6.97	3.73
HPC	54.23	6.102	0.8186	8965.163	1.8124	0.8573	-3604.3	61.37	58.05
HPT	12.07	4.167	0.8772	221.157	1.3647	0.8552	3604.3		
LPT	54.66	2.920	0.8557	72.294	1.2754	0.8361	2124.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	867.92	1.127	0.9073	2544.304	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	73.93	1.522	0.7799	0.678	0.0000	1.1791	1.0738	1.0773	0.0003
HPC	49.32	5.861	0.8271	8726.157	10.9732	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.079	0.8772	1.329	4.0789	12.6299	0.9723	1.0000	0.0003
LPT	0.84	2.444	0.8621	0.813	2.4438	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2543.57	6187.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2971	860.21
FanDuct	0.0000	0.5546	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.5687	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9279.5	2040.0	3604.3
LP_Shaft	2465.8	4525.2	2124.5

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8732	783.47	54.88	9.523
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2776	783.47	54.88	3.262
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	760.84	49.38	14.127
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	900.43	83.49	27.709
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	760.84	49.38	14.127
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	1007.14	109.89	40.613
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	760.84	49.38	14.127

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6364	555.68	-0.13	6.656
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.7092	1007.14	109.89	39.678
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3706	1007.14	109.89	22.429
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1007.14	109.89	40.613
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1007.14	109.89	40.613
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1007.14	109.89	40.613
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	496.65	-11.95	4.817
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	496.65	-11.95	4.817
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	496.65	-11.95	4.817
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	496.65	-11.95	4.817

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1760.51	0.9995	0.0230	0.19660	0.01124

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.143	0.9801	1.0000	0.9800	613.40	0.444	627.6	466.7
Byp_Nozz	1.688	0.9800	1.0000	0.9800	2006.86	0.898	892.9	6340.2

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**********************************************************************************************************************************
Date:05/13/13    Time:10:05:02    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 476.92    Stator 1 exit: 484.20    Stator 2 inlet: 493.33    Stator 2 exit: 497.99
            Stator 3 inlet: 507.43    Stator 3 exit: 511.65    Stator 4 inlet: 520.47    Stator 4 exit: 524.06
            Stator 5 inlet: 531.29    Stator 5 exit: 534.41            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.46
Fan Bypass Relative Humidity       1.80
LPC Inlet Relative Humidity        1.64
LPC Exit Relative Humidity         0.18
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          738.88    Fan/LPC Inlet Flow Velocity        185.92
Ambient Static Pressure          2.95    Fan/LPC Inlet Static Pressure        4.11
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   468.60
Additional Water at LPC Exit   0.0003590
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.730	38334.0	36.00	245.33	608.3	1.1083	674.22	8.6649	738.88	9.233	0.764	10.000	1733.0	1638.7	1142.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	245.33	4.201	471.48	-17.97	0.0000	818.16	2.947	425.97	2560.7	0.7300	1.40073	0.0000824	245.31	0.020	0.0001
FS1	Inlet.Fl_O	245.33	4.201	471.48	-17.97	0.0000	818.16	3.847	459.74	4168.2	0.3569	1.40073	0.0000824	245.31	0.020	0.0001
FS12	Splitter.Fl_02	219.94	4.199	471.48	-17.97	0.0000	733.88	3.797	458.08	3531.8	0.3819	1.40073	0.0000824	219.92	0.018	0.0001
FS2	Splitter.Fl_01	25.38	4.199	471.48	-17.97	0.0000	84.70	4.110	468.60	830.5	0.1751	1.40073	0.0000824	25.38	0.002	0.0001
FS14	Fan.Fl_O	219.94	4.712	488.93	-13.79	0.0000	666.05	3.976	465.76	2606.7	0.4983	1.40058	0.0000824	219.92	0.018	0.0001
FS23	LPC.Fl_O	25.38	6.416	543.74	-0.64	0.0000	59.53	6.137	536.88	412.6	0.2528	1.39985	0.0000824	25.38	0.002	0.0001
FS24	VaporIN.Fl_O	25.39	6.416	544.25	-2.59	0.0000	59.58	6.137	537.38	412.6	0.2530	1.39980	0.0004414	25.38	0.011	0.0004
FS25	Bleed2.Fl_O	22.85	6.416	544.25	-2.59	0.0000	53.62	6.192	538.76	412.6	0.2260	1.39980	0.0004414	22.84	0.010	0.0004
FS3	HPC.Fl_O	21.74	38.789	984.71	104.61	0.0000	11.35	34.155	950.65	49.7	0.4326	1.38160	0.0004414	21.74	0.010	0.0004
FS36	Bleed3.Fl_O	16.85	38.789	984.71	104.61	0.0000	8.80	36.128	965.55	49.3	0.3222	1.38160	0.0004414	16.84	0.007	0.0004
FS4	Burner.Fl_O	17.04	37.896	1732.95	91.91	0.0111	12.08	35.785	1708.40	74.6	0.2944	1.33069	0.0004414	16.84	0.007	0.0140
FS45	HPT.Fl_O	22.77	9.211	1146.52	-11.84	0.0083	54.02	8.366	1117.32	265.4	0.3775	1.36559	0.0004414	22.58	0.010	0.0106
FS49	LPT.Fl_O	23.04	3.311	908.54	-70.13	0.0082	135.33	3.138	895.19	860.2	0.2798	1.38064	0.0004414	22.84	0.010	0.0105
FS5	TEGV.Fl_O	23.04	3.311	908.62	-70.13	0.0082	135.34	3.138	895.26	860.2	0.2798	1.38063	0.0004414	22.84	0.010	0.0105
FS8	Core_Nozz.Fl_O	23.04	3.311	908.69	-70.13	0.0082	135.34	2.947	879.89	613.4	0.4142	1.38063	0.0004414	22.84	0.010	0.0105
FS17	FanDuctLkg.Fl_O	219.94	4.712	488.93	-13.79	0.0000	666.05	3.976	465.76	2606.7	0.4983	1.40058	0.0000824	219.92	0.018	0.0001
FS171	Bleed15.Fl_O	222.48	4.712	489.56	-13.66	0.0000	674.18	3.851	462.12	2481.9	0.5444	1.40057	0.0000865	222.46	0.019	0.0001
FS172	FanDuct.Fl_O	222.48	4.712	489.56	-13.66	0.0000	674.18	3.851	462.12	2481.9	0.5444	1.40057	0.0000865	222.46	0.019	0.0001
FS173	Byp_Nozz.Fl_O	222.48	4.712	489.56	-13.66	0.0000	674.18	2.947	428.04	2006.9	0.8468	1.40057	0.0000865	222.46	0.019	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	733.88	1.122	0.9047	2504.901	1.0370	0.9063	-1301.6	2182.81	54.68
LPC	84.70	1.528	0.8406	2504.901	1.1533	0.8499	-622.4	6.78	3.35
HPC	53.62	6.046	0.8178	8945.664	1.8093	0.8565	-3381.9	61.29	57.92
HPT	12.08	4.114	0.8760	220.128	1.3615	0.8539	3381.9		
LPT	54.02	2.781	0.8501	70.532	1.2600	0.8308	1924.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	852.70	1.119	0.9065	2481.017	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	71.17	1.494	0.7769	0.662	0.0000	1.1901	1.0693	1.0820	0.0003
HPC	48.77	5.808	0.8263	8707.178	10.9852	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.028	0.8760	1.323	4.0281	12.6299	0.9723	1.0000	0.0003
LPT	0.83	2.340	0.8564	0.793	2.3399	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2560.72	5633.9

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2798	860.21
FanDuct	0.0000	0.5444	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.6649	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9163.6	1938.3	3381.9
LP_Shaft	2388.2	4231.2	1924.0

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8410	766.36	51.01	9.211
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2674	766.36	51.01	3.311
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	744.28	45.65	13.538
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	880.50	78.88	26.487
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	744.28	45.65	13.538
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	984.71	104.61	38.789
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	744.28	45.65	13.538

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5392	544.25	-2.59	6.416
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6094	984.71	104.61	37.896
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.2832	984.71	104.61	21.488
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	984.71	104.61	38.789
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	984.71	104.61	38.789
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	984.71	104.61	38.789
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	488.93	-13.79	4.712
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	488.93	-13.79	4.712
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	488.93	-13.79	4.712
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	488.93	-13.79	4.712

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1732.90	0.9995	0.0230	0.18728	0.01112

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.124	0.9801	1.0000	0.9800	613.40	0.414	586.5	420.0
Byp_Nozz	1.599	0.9800	1.0000	0.9800	2006.86	0.847	842.0	5822.3

```
**********************************************************************************************************************************
Date:05/13/13    Time:10:05:18    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 474.83    Stator 1 exit: 481.92    Stator 2 inlet: 490.81    Stator 2 exit: 495.35
            Stator 3 inlet: 504.53    Stator 3 exit: 508.64    Stator 4 inlet: 517.22    Stator 4 exit: 520.70
            Stator 5 inlet: 527.74    Stator 5 exit: 530.76           Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.63
Fan Bypass Relative Humidity       1.95
LPC Inlet Relative Humidity        1.76
LPC Exit Relative Humidity         0.19
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          722.68    Fan/LPC Inlet Flow Velocity        183.09
Ambient Static Pressure          3.09    Fan/LPC Inlet Static Pressure        4.25
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   466.71
Additional Water at LPC Exit   0.0003278
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.714	37357.0	36.00	251.86	621.4	1.1026	685.21	8.7107	722.68	9.103	0.772	10.000	1722.0	1628.1	1135.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	251.86	4.339	469.50	-18.42	0.0000	811.56	3.088	425.97	2564.6	0.7140	1.40075	0.0000786	251.84	0.020	0.0001
FS1	Inlet.Fl_O	251.86	4.339	469.50	-18.42	0.0000	811.56	3.980	458.03	4168.2	0.3535	1.40075	0.0000786	251.84	0.020	0.0001
FS12	Splitter.Fl_02	225.93	4.337	469.50	-18.42	0.0000	728.35	3.929	456.40	3531.8	0.3785	1.40075	0.0000786	225.91	0.018	0.0001
FS2	Splitter.Fl_01	25.94	4.337	469.50	-18.42	0.0000	83.62	4.248	466.71	830.5	0.1728	1.40075	0.0000786	25.93	0.002	0.0001
FS14	Fan.Fl_O	225.93	4.853	486.46	-14.36	0.0000	662.60	4.105	463.72	2606.7	0.4947	1.40060	0.0000786	225.91	0.018	0.0001
FS23	LPC.Fl_O	25.94	6.569	539.89	-1.54	0.0000	59.20	6.287	533.16	412.6	0.2512	1.39992	0.0000786	25.93	0.002	0.0001
FS24	VaporIN.Fl_O	25.95	6.569	540.37	-3.32	0.0000	59.25	6.286	533.62	412.6	0.2515	1.39986	0.0004064	25.93	0.011	0.0004
FS25	Bleed2.Fl_O	23.35	6.569	540.37	-3.32	0.0000	53.32	6.342	534.97	412.6	0.2246	1.39986	0.0004064	23.34	0.009	0.0004
FS3	HPC.Fl_O	22.22	39.501	976.54	102.78	0.0000	11.34	34.792	942.80	49.7	0.4321	1.38210	0.0004064	22.21	0.009	0.0004
FS36	Bleed3.Fl_O	17.22	39.501	976.54	102.78	0.0000	8.79	36.796	957.56	49.3	0.3218	1.38210	0.0004064	17.21	0.007	0.0004
FS4	Burner.Fl_O	17.41	38.591	1721.96	90.16	0.0111	12.08	36.442	1697.53	74.6	0.2944	1.33125	0.0004064	17.21	0.007	0.0139
FS45	HPT.Fl_O	23.27	9.423	1139.87	-12.51	0.0083	53.80	8.567	1111.09	265.4	0.3755	1.36606	0.0004064	23.07	0.009	0.0105
FS49	LPT.Fl_O	23.54	3.451	907.39	-69.39	0.0082	132.60	3.278	894.63	860.2	0.2736	1.38074	0.0004064	23.34	0.009	0.0104
FS5	TEGV.Fl_O	23.54	3.451	907.46	-69.39	0.0082	132.60	3.278	894.70	860.2	0.2736	1.38073	0.0004064	23.34	0.009	0.0104
FS8	Core_Nozz.Fl_O	23.54	3.451	907.53	-69.39	0.0082	132.61	3.088	880.14	613.4	0.4038	1.38073	0.0004064	23.34	0.009	0.0104
FS17	FanDuctLkg.Fl_O	225.93	4.853	486.46	-14.36	0.0000	662.60	4.105	463.72	2606.7	0.4947	1.40060	0.0000786	225.91	0.018	0.0001
FS171	Bleed15.Fl_O	228.52	4.853	487.07	-14.23	0.0000	670.64	3.979	460.17	2481.9	0.5401	1.40060	0.0000823	228.50	0.019	0.0001
FS172	FanDuct.Fl_O	228.52	4.853	487.07	-14.23	0.0000	670.64	3.979	460.17	2481.9	0.5401	1.40060	0.0000823	228.50	0.019	0.0001
FS173	Byp_Nozz.Fl_O	228.52	4.853	487.07	-14.23	0.0000	670.64	3.088	428.00	2006.9	0.8298	1.40060	0.0000823	228.50	0.019	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	728.35	1.119	0.9043	2478.068	1.0361	0.9058	-1299.1	2574.39	54.61
LPC	83.62	1.515	0.8406	2478.068	1.1499	0.8497	-619.4	6.69	3.28
HPC	53.32	6.013	0.8173	8935.880	1.8072	0.8560	-3420.2	61.38	57.97
HPT	12.08	4.095	0.8754	219.799	1.3603	0.8533	3420.2		
LPT	53.80	2.731	0.8479	69.833	1.2542	0.8288	1918.6		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	846.27	1.116	0.9061	2454.440	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	70.00	1.482	0.7757	0.655	0.0000	1.1945	1.0683	1.0837	0.0003
HPC	48.50	5.777	0.8258	8697.655	10.9835	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.010	0.8754	1.321	4.0096	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.302	0.8542	0.786	2.3016	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2564.57	5657.3

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2736	860.21
FanDuct	0.0000	0.5401	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7107	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9120.9	1969.5	3420.2
LP_Shaft	2357.7	4273.9	1918.6

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8593	760.27	49.73	9.423
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2732	760.27	49.73	3.451
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	738.41	44.43	13.814
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	873.31	77.32	26.987
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	738.41	44.43	13.814
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	976.54	102.78	39.501
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	738.41	44.43	13.814

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5945	540.37	-3.32	6.569
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6662	976.54	102.78	38.591
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3330	976.54	102.78	21.907
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	976.54	102.78	39.501
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	976.54	102.78	39.501
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	976.54	102.78	39.501
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	486.46	-14.36	4.853
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	486.46	-14.36	4.853
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	486.46	-14.36	4.853
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	486.46	-14.36	4.853

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1721.90	0.9995	0.0230	0.19033	0.01106

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.117	0.9801	1.0000	0.9800	613.40	0.404	571.9	418.5
Byp_Nozz	1.571	0.9800	1.0000	0.9800	2006.86	0.830	825.1	5860.2

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**********************************************************************************************************************************
Date:05/13/13    Time:10:05:32    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 10/ 24/ 1/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 476.23    Stator 1 exit: 482.87    Stator 2 inlet: 491.17    Stator 2 exit: 495.40
            Stator 3 inlet: 503.96    Stator 3 exit: 507.77    Stator 4 inlet: 515.77    Stator 4 exit: 518.98
            Stator 5 inlet: 525.53    Stator 5 exit: 528.30            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.24
Fan Bypass Relative Humidity       2.48
LPC Inlet Relative Humidity        2.22
LPC Exit Relative Humidity         0.28
HPC Relative Humidity              0.00
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          682.24    Fan/LPC Inlet Flow Velocity        176.55
Ambient Static Pressure          3.58    Fan/LPC Inlet Static Pressure        4.74
Ambient Static Temperature     432.42    Fan/LPC Inlet Static Temperature   468.62
Additional Water at LPC Exit   0.0003050
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.669	34281.0	36.00	272.67	668.1	1.0939	730.83	8.8177	682.24	8.727	0.795	10.000	1711.3	1617.6	1130.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	272.67	4.831	471.21	-18.12	0.0000	790.60	3.578	432.42	2577.1	0.6690	1.40074	0.0000968	272.64	0.026	0.0001
FS1	Inlet.Fl_O	272.67	4.831	471.21	-18.12	0.0000	790.60	4.453	460.36	4168.2	0.3429	1.40074	0.0000968	272.64	0.026	0.0001
FS12	Splitter.Fl_02	244.89	4.829	471.21	-18.12	0.0000	710.43	4.399	458.80	3531.8	0.3674	1.40074	0.0000968	244.87	0.024	0.0001
FS2	Splitter.Fl_01	27.77	4.829	471.21	-18.12	0.0000	80.57	4.736	468.62	830.5	0.1663	1.40074	0.0000968	27.77	0.003	0.0001
FS14	Fan.Fl_O	244.89	5.360	487.03	-14.32	0.0000	650.64	4.571	465.33	2606.7	0.4824	1.40059	0.0000968	244.87	0.024	0.0001
FS23	LPC.Fl_O	27.77	7.122	537.04	-2.33	0.0000	58.31	6.826	530.56	412.6	0.2472	1.39996	0.0000968	27.77	0.003	0.0001
FS24	VaporIN.Fl_O	27.78	7.122	537.49	-3.98	0.0000	58.36	6.825	530.99	412.6	0.2474	1.39991	0.0004018	27.77	0.011	0.0004
FS25	Bleed2.Fl_O	25.00	7.122	537.49	-3.98	0.0000	52.52	6.884	532.29	412.6	0.2210	1.39991	0.0004018	24.99	0.010	0.0004
FS3	HPC.Fl_O	23.79	42.162	967.59	100.59	0.0000	11.33	37.152	934.25	49.7	0.4312	1.38263	0.0004018	23.78	0.010	0.0004
FS36	Bleed3.Fl_O	18.44	42.162	967.59	100.59	0.0000	8.78	39.284	948.83	49.3	0.3212	1.38263	0.0004018	18.43	0.007	0.0004
FS4	Burner.Fl_O	18.64	41.191	1711.28	88.04	0.0110	12.08	38.896	1686.99	74.6	0.2943	1.33178	0.0004018	18.43	0.007	0.0138
FS45	HPT.Fl_O	24.91	10.174	1135.00	-13.13	0.0082	53.24	9.271	1107.02	265.4	0.3708	1.36639	0.0004018	24.70	0.010	0.0105
FS49	LPT.Fl_O	25.21	3.940	915.91	-66.65	0.0081	124.95	3.766	904.59	860.2	0.2565	1.38026	0.0004018	24.99	0.010	0.0103
FS5	TEGV.Fl_O	25.21	3.940	915.99	-66.65	0.0081	124.95	3.766	904.66	860.2	0.2565	1.38025	0.0004018	24.99	0.010	0.0103
FS8	Core_Nozz.Fl_O	25.21	3.940	916.06	-66.65	0.0081	124.96	3.578	892.04	613.3	0.3759	1.38025	0.0004018	24.99	0.010	0.0103
FS17	FanDuctLkg.Fl_O	244.89	5.360	487.03	-14.32	0.0000	650.64	4.571	465.33	2606.7	0.4824	1.40059	0.0000968	244.87	0.024	0.0001
FS171	Bleed15.Fl_O	247.67	5.360	487.60	-14.21	0.0000	658.40	4.440	462.02	2481.9	0.5256	1.40059	0.0001002	247.65	0.025	0.0001
FS172	FanDuct.Fl_O	247.67	5.360	487.60	-14.21	0.0000	658.40	4.440	462.02	2481.9	0.5256	1.40059	0.0001002	247.65	0.025	0.0001
FS173	Byp_Nozz.Fl_O	247.67	5.360	487.60	-14.21	0.0000	658.40	3.578	434.35	2006.9	0.7821	1.40059	0.0001002	247.65	0.025	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	710.43	1.110	0.9032	2395.649	1.0336	0.9046	-1313.8	5797.22	54.20
LPC	80.57	1.475	0.8412	2395.649	1.1397	0.8497	-620.3	6.41	3.05
HPC	52.52	5.920	0.8157	8909.582	1.8002	0.8545	-3609.5	61.81	58.30
HPT	12.08	4.049	0.8747	219.248	1.3569	0.8527	3609.5		
LPT	53.24	2.582	0.8428	67.778	1.2370	0.8242	1934.1		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	825.45	1.108	0.9050	2372.807	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	66.44	1.445	0.7718	0.633	0.0000	1.2128	1.0676	1.0900	0.0003
HPC	47.77	5.688	0.8242	8672.058	10.9678	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.964	0.8746	1.318	3.9642	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.190	0.8490	0.762	2.1902	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2577.08	5781.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2565	860.21
FanDuct	0.0000	0.5256	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8177	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9069.8	2090.2	3609.5
LP_Shaft	2283.4	4448.5	1934.1

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9201	754.28	48.30	10.174
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2925	754.28	48.30	3.940
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.72	43.07	14.831
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	865.76	75.49	28.847
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.72	43.07	14.831
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	967.59	100.59	42.162
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.72	43.07	14.831

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.7782	537.49	-3.98	7.122
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.8549	967.59	100.59	41.191
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.4981	967.59	100.59	23.449
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	967.59	100.59	42.162
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	967.59	100.59	42.162
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	967.59	100.59	42.162
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	487.03	-14.32	5.360
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	487.03	-14.32	5.360
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	487.03	-14.32	5.360
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	487.03	-14.32	5.360

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1711.22	0.9995	0.0230	0.20301	0.01101

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.101	0.9801	1.0000	0.9800	613.40	0.376	535.8	419.8
Byp_Nozz	1.498	0.9800	1.0000	0.9800	2006.86	0.782	783.3	6030.1

```
**********************************************************************************************************************************
Date:05/13/13    Time:10:05:49    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 14/ 28/ 1/12    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 484.51    Stator 1 exit: 490.21    Stator 2 inlet: 497.25    Stator 2 exit: 500.66
            Stator 3 inlet: 508.01    Stator 3 exit: 511.00    Stator 4 inlet: 517.92    Stator 4 exit: 520.39
            Stator 5 inlet: 525.96    Stator 5 exit: 528.05           Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.18
Fan Bypass Relative Humidity       3.37
LPC Inlet Relative Humidity        3.05
LPC Exit Relative Humidity         0.57
HPC Relative Humidity              0.01
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          630.80    Fan/LPC Inlet Flow Velocity        177.28
Ambient Static Pressure          4.36    Fan/LPC Inlet Static Pressure        5.49
Ambient Static Temperature     447.58    Fan/LPC Inlet Static Temperature   478.12
Additional Water at LPC Exit   0.0003156
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.608	30029.0	36.00	298.12	711.1	1.1099	789.23	8.4157	630.80	8.109	0.827	10.000	1709.2	1615.2	1132.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	298.12	5.595	480.74	-16.28	0.0000	753.87	4.358	447.58	2589.7	0.6080	1.40064	0.0001750	298.07	0.052	0.0002
FS1	Inlet.Fl_O	298.12	5.595	480.74	-16.28	0.0000	753.87	5.201	470.80	4168.2	0.3247	1.40064	0.0001750	298.07	0.052	0.0002
FS12	Splitter.Fl_02	266.46	5.592	480.74	-16.28	0.0000	674.15	5.149	469.51	3531.8	0.3455	1.40064	0.0001750	266.42	0.047	0.0002
FS2	Splitter.Fl_01	31.66	5.592	480.74	-16.28	0.0000	80.11	5.487	478.12	830.5	0.1653	1.40064	0.0001750	31.66	0.006	0.0002
FS14	Fan.Fl_O	266.46	6.131	494.95	-12.88	0.0000	623.95	5.315	475.14	2606.7	0.4561	1.40050	0.0001750	266.42	0.047	0.0002
FS23	LPC.Fl_O	31.66	7.805	536.97	-2.80	0.0000	60.66	7.452	529.92	412.6	0.2580	1.39995	0.0001750	31.66	0.006	0.0002
FS24	VaporIN.Fl_O	31.67	7.805	537.43	-4.51	0.0000	60.71	7.451	530.36	412.6	0.2582	1.39990	0.0004905	31.66	0.016	0.0005
FS25	Bleed2.Fl_O	26.92	7.805	537.43	-4.51	0.0000	51.60	7.553	532.42	412.6	0.2170	1.39990	0.0004905	26.91	0.013	0.0005
FS3	HPC.Fl_O	25.62	45.368	962.98	98.94	0.0000	11.31	40.000	929.92	49.7	0.4302	1.38289	0.0004905	25.60	0.013	0.0005
FS36	Bleed3.Fl_O	19.85	45.368	962.98	98.94	0.0000	8.76	42.284	944.37	49.3	0.3205	1.38289	0.0004905	19.84	0.010	0.0005
FS4	Burner.Fl_O	20.07	44.323	1709.17	86.38	0.0110	12.08	41.854	1684.90	74.6	0.2943	1.33184	0.0004905	19.84	0.010	0.0140
FS45	HPT.Fl_O	26.83	11.109	1136.62	-13.67	0.0082	52.53	10.152	1109.46	265.4	0.3651	1.36626	0.0004905	26.59	0.013	0.0106
FS49	LPT.Fl_O	27.14	4.710	937.83	-62.14	0.0081	113.87	4.539	928.34	860.2	0.2322	1.37892	0.0004905	26.91	0.013	0.0105
FS5	TEGV.Fl_O	27.14	4.710	937.90	-62.14	0.0081	113.87	4.539	928.41	860.2	0.2322	1.37892	0.0004905	26.91	0.013	0.0105
FS8	Core_Nozz.Fl_O	27.14	4.710	937.98	-62.14	0.0081	113.88	4.358	918.16	613.4	0.3372	1.37891	0.0004905	26.91	0.013	0.0105
FS17	FanDuctLkg.Fl_O	266.46	6.131	494.95	-12.88	0.0000	623.95	5.315	475.14	2606.7	0.4561	1.40050	0.0001750	266.42	0.047	0.0002
FS171	Bleed15.Fl_O	271.21	6.131	495.69	-12.73	0.0000	635.55	5.169	472.07	2481.9	0.4998	1.40049	0.0001805	271.16	0.049	0.0002
FS172	FanDuct.Fl_O	271.21	6.131	495.69	-12.73	0.0000	635.55	5.169	472.07	2481.9	0.4998	1.40049	0.0001805	271.16	0.049	0.0002
FS173	Byp_Nozz.Fl_O	271.21	6.131	495.69	-12.73	0.0000	635.55	4.358	449.59	2006.9	0.7154	1.40049	0.0001805	271.16	0.049	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	674.15	1.096	0.9014	2239.512	1.0296	0.9027	-1284.2	-8416.53	52.79
LPC	80.11	1.396	0.8547	2239.512	1.1170	0.8614	-604.2	5.98	2.60
HPC	51.60	5.813	0.8138	8879.291	1.7918	0.8527	-3844.7	62.30	58.68
HPT	12.08	3.990	0.8744	218.626	1.3525	0.8526	3844.7		
LPT	52.53	2.359	0.8338	63.952	1.2095	0.8163	1888.4		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	783.29	1.094	0.9033	2218.159	0.0416	0.8607	1.0235	0.9980	0.9905
LPC	59.99	1.378	0.7653	0.592	0.0000	1.3353	1.0454	1.1169	0.0003
HPC	46.93	5.586	0.8222	8642.575	10.9499	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.907	0.8743	1.314	3.9070	12.6299	0.9723	1.0000	0.0003
LPT	0.81	2.022	0.8399	0.719	2.0218	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2589.67	5845.0
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2322	860.21
FanDuct	0.0000	0.4998	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.4157	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9038.5	2234.1	3844.7
LP_Shaft	2156.1	4600.2	1888.4

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9907	751.89	47.22	11.109
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3150	751.89	47.22	4.710
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	730.57	42.04	16.069
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	862.20	74.11	31.094
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	730.57	42.04	16.069
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	962.98	98.94	45.368
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	730.57	42.04	16.069

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1500	1.0000	1.0000	4.7509	537.43	-4.51	7.805
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.0739	962.98	98.94	44.323
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.6897	962.98	98.94	25.325
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	962.98	98.94	45.368
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	962.98	98.94	45.368
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	962.98	98.94	45.368
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	494.95	-12.88	6.131
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	494.95	-12.88	6.131
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	494.95	-12.88	6.131
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	494.95	-12.88	6.131

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1709.11	0.9995	0.0230	0.21923	0.01105

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.081	0.9801	1.0000	0.9800	613.40	0.337	487.5	411.2
Byp_Nozz	1.407	0.9800	1.0000	0.9800	2006.86	0.715	729.0	6144.8

```
**********************************************************************************************************************************
Date:05/13/13    Time:10:06:18    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 19/ 47/ 2/16    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 492.29    Stator 1 exit: 496.45    Stator 2 inlet: 501.18    Stator 2 exit: 503.04
            Stator 3 inlet: 508.30    Stator 3 exit: 509.74    Stator 4 inlet: 514.78    Stator 4 exit: 515.82
            Stator 5 inlet: 519.50    Stator 5 exit: 520.25            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.02
Fan Bypass Relative Humidity       4.21
LPC Inlet Relative Humidity        4.03
LPC Exit Relative Humidity         1.37
HPC Relative Humidity              0.01
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          582.56    Fan/LPC Inlet Flow Velocity        195.51
Ambient Static Pressure          5.30    Fan/LPC Inlet Static Pressure        6.37
Ambient Static Temperature     463.14    Fan/LPC Inlet Static Temperature   488.23
Additional Water at LPC Exit   0.0002946
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.552	25666.0	36.00	322.29	711.3	1.1716	833.38	7.1225	582.56	7.195	0.857	10.000	1713.8	1617.8	1140.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	322.29	6.516	491.41	-14.47	0.0000	707.51	5.297	463.14	2581.2	0.5520	1.40052	0.0003043	322.19	0.098	0.0003
FS1	Inlet.Fl_O	322.29	6.516	491.41	-14.47	0.0000	707.51	6.116	482.59	4168.2	0.3022	1.40052	0.0003043	322.19	0.098	0.0003
FS12	Splitter.Fl_02	282.61	6.513	491.41	-14.47	0.0000	620.72	6.082	481.88	3531.8	0.3143	1.40052	0.0003043	282.52	0.086	0.0003
FS2	Splitter.Fl_01	39.68	6.513	491.41	-14.47	0.0000	87.15	6.366	488.23	830.5	0.1805	1.40052	0.0003043	39.67	0.012	0.0003
FS14	Fan.Fl_O	282.61	7.039	503.66	-11.54	0.0000	581.42	6.246	486.73	2606.7	0.4167	1.40039	0.0003043	282.52	0.086	0.0003
FS23	LPC.Fl_O	39.68	8.183	531.64	-4.82	0.0000	72.15	7.647	521.45	412.6	0.3125	1.40001	0.0003043	39.67	0.012	0.0003
FS24	VaporIN.Fl_O	39.69	8.183	532.07	-6.42	0.0000	72.20	7.646	521.86	412.6	0.3128	1.39996	0.0005989	39.67	0.024	0.0006
FS25	Bleed2.Fl_O	27.78	8.183	532.07	-6.42	0.0000	50.54	7.930	527.32	412.6	0.2122	1.39996	0.0005989	27.77	0.017	0.0006
FS3	HPC.Fl_O	26.44	46.883	950.19	95.16	0.0000	11.22	41.439	918.17	49.7	0.4258	1.38363	0.0005989	26.42	0.016	0.0006
FS36	Bleed3.Fl_O	20.49	46.883	950.19	95.16	0.0000	8.69	43.750	932.13	49.3	0.3176	1.38363	0.0005989	20.48	0.012	0.0006
FS4	Burner.Fl_O	20.72	45.803	1713.83	82.35	0.0113	12.08	43.250	1689.50	74.6	0.2945	1.33143	0.0005989	20.48	0.012	0.0144
FS45	HPT.Fl_O	27.69	11.867	1144.85	-15.75	0.0084	50.94	10.912	1119.39	265.4	0.3523	1.36558	0.0005989	27.44	0.016	0.0109
FS49	LPT.Fl_O	28.01	5.615	969.67	-58.34	0.0083	100.25	5.459	962.19	860.2	0.2031	1.37685	0.0005989	27.77	0.017	0.0108
FS5	TEGV.Fl_O	28.01	5.615	969.74	-58.34	0.0083	100.25	5.459	962.26	860.2	0.2031	1.37684	0.0005989	27.77	0.017	0.0108
FS8	Core_Nozz.Fl_O	28.01	5.615	969.81	-58.34	0.0083	100.26	5.297	954.43	613.4	0.2923	1.37684	0.0005989	27.77	0.017	0.0108
FS17	FanDuctLkg.Fl_O	282.61	7.039	503.66	-11.54	0.0000	581.42	6.246	486.73	2606.7	0.4167	1.40039	0.0003043	282.52	0.086	0.0003
FS171	Bleed15.Fl_O	294.52	7.039	504.81	-11.33	0.0000	606.61	6.054	483.51	2481.9	0.4690	1.40037	0.0003162	294.42	0.093	0.0003
FS172	FanDuct.Fl_O	294.52	7.039	504.81	-11.33	0.0000	606.61	6.054	483.51	2481.9	0.4690	1.40037	0.0003162	294.42	0.093	0.0003
FS173	Byp_Nozz.Fl_O	294.52	7.039	504.81	-11.33	0.0000	606.61	5.297	465.38	2006.9	0.6504	1.40037	0.0003162	294.42	0.093	0.0003

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	620.72	1.081	0.9017	2025.930	1.0249	0.9028	-1174.2	-2600.98	50.00
LPC	87.15	1.256	0.8236	2025.930	1.0819	0.8292	-541.7	6.43	2.41
HPC	50.54	5.730	0.8121	8845.414	1.7858	0.8511	-3896.1	61.75	58.03
HPT	12.08	3.860	0.8752	216.408	1.3429	0.8542	3896.1		
LPT	50.94	2.113	0.8234	58.281	1.1778	0.8076	1715.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	721.21	1.079	0.9035	2006.613	0.0424	0.8607	1.0235	0.9980	0.9905
LPC	52.85	1.305	0.7603	0.535	0.0000	1.6491	0.8415	1.0832	0.0003
HPC	45.97	5.507	0.8205	8609.601	10.9973	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.780	0.8752	1.301	3.7804	12.6299	0.9723	1.0000	0.0003
LPT	0.78	1.837	0.8295	0.656	1.8374	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2581.16	5835.6

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2031	860.21
FanDuct	0.0000	0.4690	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.1225	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8959.0	2284.1	3896.1
LP_Shaft	1972.0	4570.0	1715.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0224	742.72	44.37	11.867
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3251	742.72	44.37	5.615
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	721.77	39.29	16.697
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	851.12	70.78	32.177
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	721.77	39.29	16.697
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	950.19	95.16	46.883
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	721.77	39.29	16.697

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.3000	1.0000	1.0000	11.9071	532.07	-6.42	8.183
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.1723	950.19	95.16	45.803
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.7758	950.19	95.16	26.392
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	950.19	95.16	46.883
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	950.19	95.16	46.883
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	950.19	95.16	46.883
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	503.66	-11.54	7.039
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	503.66	-11.54	7.039
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	503.66	-11.54	7.039
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	503.66	-11.54	7.039

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1713.77	0.9995	0.0230	0.23149	0.01131

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.060	0.9801	1.0000	0.9800	613.40	0.292	430.4	374.7
Byp_Nozz	1.329	0.9800	1.0000	0.9800	2006.86	0.650	674.3	6172.1

```
**********************************************************************************************************************************
Date:05/13/13    Time:10:06:48    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 24/ 52/ 2/21    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 505.23    Stator 1 exit: 508.19    Stator 2 inlet: 510.98    Stator 2 exit: 511.77
            Stator 3 inlet: 515.13    Stator 3 exit: 515.50    Stator 4 inlet: 518.77    Stator 4 exit: 518.84
            Stator 5 inlet: 520.73    Stator 5 exit: 520.60            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         6.01
Fan Bypass Relative Humidity       5.19
LPC Inlet Relative Humidity        5.20
LPC Exit Relative Humidity         2.84
HPC Relative Humidity              0.01
Drop Diameter                0.0000250    Inlet Length                        40.00
Ambient Flow Velocity          528.20    Fan/LPC Inlet Flow Velocity        203.11
Ambient Static Pressure          6.74    Fan/LPC Inlet Static Pressure        7.75
Ambient Static Temperature     483.18    Fan/LPC Inlet Static Temperature   502.97
Additional Water at LPC Exit   0.0003085

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.490   20047.0    36.00    357.72      763.9    1.1954     913.19    6.3434    528.20     6.256     0.888         10.000    1737.5   1638.0   1166.5


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht       FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O          357.72     7.943    506.41    -12.46    0.0000    653.97     6.740    483.18    2591.1  0.4900   1.40031   0.0005787    357.51    0.207    0.0006
FS1   Inlet.Fl_O            357.72     7.943    506.41    -12.46    0.0000    653.97     7.531    498.75    4168.2  0.2770   1.40031   0.0005787    357.51    0.207    0.0006
FS12  Splitter.Fl_02        309.01     7.939    506.41    -12.46    0.0000    565.19     7.509    498.41    3531.8  0.2831   1.40031   0.0005787    308.83    0.179    0.0006
FS2   Splitter.Fl_01         48.71     7.939    506.41    -12.46    0.0000     89.10     7.752    502.97     830.5  0.1847   1.40031   0.0005787     48.68    0.028    0.0006
FS14  Fan.Fl_O             309.01     8.480    517.07     -9.90    0.0000    534.68     7.691    502.83    2606.7  0.3762   1.40018   0.0005787    308.83    0.179    0.0006
FS23  LPC.Fl_O              48.71     9.056    534.30     -5.77    0.0000     80.23     8.308    521.29     412.6  0.3531   1.39993   0.0005787     48.68    0.028    0.0006
FS24  VaporIN.Fl_O          48.73     9.056    534.75     -7.44    0.0000     80.29     8.306    521.71     412.6  0.3535   1.39988   0.0008871     48.68    0.043    0.0009
FS25  Bleed2.Fl_O           29.24     9.056    534.75     -7.44    0.0000     48.18     8.802    530.43     412.6  0.2018   1.39988   0.0008871     29.21    0.026    0.0009
FS3   HPC.Fl_O              27.82    49.690    944.13     92.03    0.0000     11.10    44.057    913.08      49.7  0.4203   1.38394   0.0008871     27.79    0.025    0.0009
FS36  Bleed3.Fl_O           21.56    49.690    944.13     92.03    0.0000      8.60    46.443    926.57      49.3  0.3139   1.38394   0.0008871     21.54    0.019    0.0009
FS4   Burner.Fl_O           21.81    48.546   1737.49     78.73    0.0118     12.09    45.838   1712.87      74.6  0.2947   1.32997   0.0008871     21.54    0.019    0.0152
FS45  HPT.Fl_O              29.15    13.284   1171.24    -17.10    0.0088     48.46    12.326   1148.07     265.4  0.3328   1.36361   0.0008871     28.87    0.026    0.0116
FS49  LPT.Fl_O              29.49     7.031   1018.01    -54.27    0.0087     86.36     6.886   1012.29     860.2  0.1740   1.37355   0.0008871     29.21    0.026    0.0115
FS5   TEGV.Fl_O             29.49     7.031   1018.08    -54.27    0.0087     86.36     6.886   1012.36     860.2  0.1741   1.37354   0.0008871     29.21    0.026    0.0115
FS8   Core_Nozz.Fl_O        29.49     7.031   1018.15    -54.27    0.0087     86.36     6.740   1006.52     613.4  0.2486   1.37354   0.0008871     29.21    0.026    0.0115
FS17  FanDuctLkg.Fl_O      309.01     8.480    517.07     -9.90    0.0000    534.68     7.691    502.83    2606.7  0.3762   1.40018   0.0005787    308.83    0.179    0.0006
FS171 Bleed15.Fl_O         328.50     8.480    518.12     -9.76    0.0000    568.98     7.461    499.50    2481.9  0.4315   1.40016   0.0005970    328.30    0.196    0.0006
FS172 FanDuct.Fl_O         328.50     8.480    518.12     -9.76    0.0000    568.98     7.461    499.50    2481.9  0.4315   1.40016   0.0005970    328.30    0.196    0.0006
FS173 Byp_Nozz.Fl_O        328.50     8.480    518.12     -9.76    0.0000    568.98     6.740    485.20    2006.9  0.5822   1.40016   0.0005970    328.30    0.196    0.0006

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR      eff        Nc       TR   efPoly       pwr       SMN      SMW
Fan       565.19   1.068   0.9035  1815.905   1.0211   0.9044  -1118.3  -1833.94    46.56
LPC        89.10   1.141   0.6960  1815.905   1.0551   0.7016   -461.3      7.12     2.04
HPC        48.18   5.487   0.8076  8765.283   1.7656   0.8467  -4014.5     62.15    58.13
HPT        12.09   3.655   0.8766   213.518   1.3265   0.8567   4014.5
LPT        48.46   1.889   0.8152    52.429   1.1472   0.8014   1579.6

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap     NcMap    R/Parm    s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan        656.70   1.067   0.9054  1798.590    0.0437     0.8607    1.0235    0.9980    0.9905
LPC         46.03   1.238   0.7547     0.480    0.0000     1.9357    0.5898    0.9221    0.0003
HPC         43.82   5.276   0.8160  8531.607   11.0073     1.0995    1.0494    0.9898    0.9733
HPT          0.96   3.581   0.8766     1.283    3.5810    12.6299    0.9723    1.0000    0.0003
LPT          0.74   1.669   0.8213     0.590    1.6689    65.2590    0.7521    0.9926    0.0005
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===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2591.06	5872.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1740	860.21
FanDuct	0.0000	0.4315	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.3434	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8900.1	2369.1	4014.5
LP_Shaft	1794.3	4623.6	1579.6

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0759	740.95	42.29	13.284
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3421	740.95	42.29	7.031
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	720.44	37.32	17.995
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	847.09	68.15	34.249
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	720.44	37.32	17.995
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	944.13	92.03	49.690
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	720.44	37.32	17.995

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.4000	1.0000	1.0000	19.4912	534.75	-7.44	9.056
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.3383	944.13	92.03	48.546
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.9211	944.13	92.03	28.376
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	944.13	92.03	49.690
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	944.13	92.03	49.690
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	944.13	92.03	49.690
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	517.07	-9.90	8.480
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	517.07	-9.90	8.480
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	517.07	-9.90	8.480
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	517.07	-9.90	8.480

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1737.43	0.9995	0.0230	0.25367	0.01178

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.043	0.9801	1.0000	0.9800	613.40	0.249	375.5	344.2
Byp_Nozz	1.258	0.9800	1.0000	0.9800	2006.86	0.582	616.3	6292.4

50µm, ISA +18R

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**********************************************************************************************************************************
Date:07/05/13    Time:09:26:29    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 463.24    Stator 1 exit: 470.64    Stator 2 inlet: 479.94    Stator 2 exit: 484.70
            Stator 3 inlet: 494.32    Stator 3 exit: 498.64    Stator 4 inlet: 507.63    Stator 4 exit: 511.31
            Stator 5 inlet: 518.70    Stator 5 exit: 521.92            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.76
Fan Bypass Relative Humidity       1.24
LPC Inlet Relative Humidity        1.13
LPC Exit Relative Humidity         0.10
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          772.64    Fan/LPC Inlet Flow Velocity        187.91
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   454.80
Additional Water at LPC Exit   0.0000542
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	257.26	608.4	1.1341	690.03	8.5932	772.64	9.489	0.736	10.000	1693.4	1601.4	1112.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	257.26	4.267	457.74	-20.96	0.0000	832.41	2.854	407.97	2539.4	0.7800	1.40084	0.0000295	257.26	0.008	0.0000
FS1	Inlet.Fl_O	257.26	4.267	457.74	-20.96	0.0000	832.41	3.893	445.88	4168.2	0.3642	1.40084	0.0000295	257.26	0.008	0.0000
FS12	Splitter.Fl_02	230.45	4.265	457.74	-20.96	0.0000	746.01	3.841	444.23	3531.8	0.3896	1.40084	0.0000295	230.44	0.007	0.0000
FS2	Splitter.Fl_01	26.82	4.265	457.74	-20.96	0.0000	86.81	4.170	454.80	830.5	0.1797	1.40084	0.0000295	26.82	0.001	0.0000
FS14	Fan.Fl_O	230.45	4.811	475.49	-16.70	0.0000	673.99	4.037	452.23	2606.7	0.5066	1.40071	0.0000295	230.44	0.007	0.0000
FS23	LPC.Fl_O	26.82	6.639	531.26	-3.33	0.0000	60.08	6.345	524.42	412.6	0.2553	1.40005	0.0000295	26.82	0.001	0.0000
FS24	VaporIN.Fl_O	26.82	6.639	531.36	-3.62	0.0000	60.09	6.345	524.52	412.6	0.2553	1.40004	0.0000837	26.82	0.002	0.0001
FS25	Bleed2.Fl_O	24.14	6.639	531.36	-3.62	0.0000	54.08	6.403	525.89	412.6	0.2280	1.40004	0.0000837	24.13	0.002	0.0001
FS3	HPC.Fl_O	22.97	40.488	964.30	101.58	0.0000	11.37	35.638	930.77	49.7	0.4331	1.38288	0.0000837	22.96	0.002	0.0001
FS36	Bleed3.Fl_O	17.80	40.488	964.30	101.58	0.0000	8.81	37.704	945.45	49.3	0.3224	1.38288	0.0000837	17.80	0.001	0.0001
FS4	Burner.Fl_O	17.99	39.555	1693.36	89.30	0.0108	12.08	37.354	1669.26	74.6	0.2941	1.33284	0.0000837	17.80	0.001	0.0132
FS45	HPT.Fl_O	24.05	9.489	1116.92	-12.58	0.0080	54.65	8.596	1087.58	265.4	0.3824	1.36774	0.0000837	23.85	0.002	0.0099
FS49	LPT.Fl_O	24.33	3.259	875.30	-71.58	0.0079	142.53	3.069	860.85	860.2	0.2960	1.38276	0.0000837	24.13	0.002	0.0098
FS5	TEGV.Fl_O	24.33	3.259	875.38	-71.58	0.0079	142.53	3.069	860.92	860.2	0.2960	1.38275	0.0000837	24.13	0.002	0.0098
FS8	Core_Nozz.Fl_O	24.33	3.259	875.45	-71.58	0.0079	142.54	2.854	843.84	613.4	0.4418	1.38275	0.0000837	24.13	0.002	0.0098
FS17	FanDuctLkg.Fl_O	230.45	4.811	475.49	-16.70	0.0000	673.99	4.037	452.23	2606.7	0.5066	1.40071	0.0000295	230.44	0.007	0.0000
FS171	Bleed15.Fl_O	233.13	4.811	476.13	-16.55	0.0000	682.30	3.904	448.50	2481.9	0.5544	1.40070	0.0000301	233.12	0.007	0.0000
FS172	FanDuct.Fl_O	233.13	4.811	476.13	-16.55	0.0000	682.30	3.904	448.50	2481.9	0.5544	1.40070	0.0000301	233.12	0.007	0.0000
FS173	Byp_Nozz.Fl_O	233.13	4.811	476.13	-16.55	0.0000	682.30	2.854	410.03	2006.9	0.8967	1.40070	0.0000301	233.12	0.007	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	746.01	1.128	0.9051	2560.883	1.0388	0.9067	-1386.4	1662.37	54.94
LPC	86.81	1.557	0.8402	2560.883	1.1606	0.8499	-668.8	6.95	3.67
HPC	54.08	6.098	0.8187	8960.639	1.8148	0.8574	-3505.3	61.08	57.75
HPT	12.08	4.168	0.8739	220.402	1.3661	0.8512	3505.3		
LPT	54.65	2.912	0.8506	71.985	1.2742	0.8304	2055.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	866.79	1.125	0.9070	2536.465	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	73.59	1.519	0.7796	0.676	0.0000	1.1797	1.0734	1.0778	0.0003
HPC	49.18	5.858	0.8271	8721.754	10.9930	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.081	0.8739	1.325	4.0806	12.6299	0.9723	1.0000	0.0003
LPT	0.84	2.438	0.8569	0.810	2.4380	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2539.40	6178.0
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2960	860.21
FanDuct	0.0000	0.5544	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.5932	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9069.6	2029.9	3505.3
LP_Shaft	2405.8	4486.7	2055.2

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	0.8882	749.57	48.98	9.489
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.2824	749.57	48.98	3.259
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	727.87	43.72	14.086
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	861.79	76.33	27.625
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	727.87	43.72	14.086
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	964.30	101.58	40.488
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	727.87	43.72	14.086

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1000	1.0000	1.0000	2.6819	531.36	-3.62	6.639
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	2.7560	964.30	101.58	39.555
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.4115	964.30	101.58	22.357
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	964.30	101.58	40.488
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	964.30	101.58	40.488
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	964.30	101.58	40.488
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	475.49	-16.70	4.811
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	475.49	-16.70	4.811
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	475.49	-16.70	4.811
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	475.49	-16.70	4.811

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1693.29	0.9995	0.0230	0.19168	0.01077

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.142	0.9801	1.0000	0.9800	613.40	0.442	613.1	463.6
Byp_Nozz	1.686	0.9800	1.0000	0.9800	2006.86	0.897	872.6	6322.8

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**********************************************************************************************************************************
Date:07/05/13    Time:09:26:46    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 456.76    Stator 1 exit: 463.69    Stator 2 inlet: 472.40    Stator 2 exit: 476.84
            Stator 3 inlet: 485.83    Stator 3 exit: 489.85    Stator 4 inlet: 498.26    Stator 4 exit: 501.67
            Stator 5 inlet: 508.57    Stator 5 exit: 511.54            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.23
Fan Bypass Relative Humidity       1.61
LPC Inlet Relative Humidity        1.45
LPC Exit Relative Humidity         0.13
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          723.11    Fan/LPC Inlet Flow Velocity        181.25
Ambient Static Pressure          2.95    Fan/LPC Inlet Static Pressure        4.11
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   448.83
Additional Water at LPC Exit   0.0000485
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.730	38334.0	18.00	250.31	599.3	1.0980	657.99	8.6866	723.11	9.209	0.763	10.000	1667.2	1575.9	1097.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	250.31	4.201	451.57	-22.43	0.0000	816.95	2.947	407.97	2556.8	0.7300	1.40089	0.0000285	250.30	0.007	0.0000
FS1	Inlet.Fl_O	250.31	4.201	451.57	-22.43	0.0000	816.95	3.848	440.36	4168.2	0.3563	1.40089	0.0000285	250.30	0.007	0.0000
FS12	Splitter.Fl_02	224.47	4.199	451.57	-22.43	0.0000	732.97	3.798	438.77	3531.8	0.3813	1.40089	0.0000285	224.46	0.006	0.0000
FS2	Splitter.Fl_01	25.84	4.199	451.57	-22.43	0.0000	84.38	4.111	448.83	830.5	0.1745	1.40089	0.0000285	25.84	0.001	0.0000
FS14	Fan.Fl_O	224.47	4.706	468.12	-18.46	0.0000	665.89	3.972	445.95	2606.7	0.4981	1.40077	0.0000285	224.46	0.006	0.0000
FS23	LPC.Fl_O	25.84	6.402	520.42	-5.92	0.0000	59.42	6.125	513.88	412.6	0.2522	1.40021	0.0000285	25.84	0.001	0.0000
FS24	VaporIN.Fl_O	25.84	6.402	520.52	-6.18	0.0000	59.43	6.125	513.97	412.6	0.2523	1.40020	0.0000770	25.84	0.002	0.0001
FS25	Bleed2.Fl_O	23.26	6.402	520.52	-6.18	0.0000	53.49	6.179	515.28	412.6	0.2253	1.40020	0.0000770	23.26	0.002	0.0001
FS3	HPC.Fl_O	22.13	38.692	942.96	96.34	0.0000	11.33	34.090	910.34	49.7	0.4313	1.38414	0.0000770	22.13	0.002	0.0001
FS36	Bleed3.Fl_O	17.15	38.692	942.96	96.34	0.0000	8.78	36.048	924.60	49.3	0.3212	1.38414	0.0000770	17.15	0.001	0.0001
FS4	Burner.Fl_O	17.33	37.801	1667.21	84.23	0.0107	12.08	35.696	1643.41	74.6	0.2940	1.33417	0.0000770	17.15	0.001	0.0131
FS45	HPT.Fl_O	23.17	9.183	1101.02	-15.03	0.0080	54.02	8.341	1072.82	265.4	0.3770	1.36883	0.0000770	22.98	0.002	0.0098
FS49	LPT.Fl_O	23.44	3.309	873.17	-70.51	0.0079	135.06	3.137	860.35	860.2	0.2789	1.38293	0.0000770	23.26	0.002	0.0097
FS5	TEGV.Fl_O	23.44	3.309	873.25	-70.51	0.0079	135.07	3.137	860.42	860.2	0.2789	1.38293	0.0000770	23.26	0.002	0.0097
FS8	Core_Nozz.Fl_O	23.44	3.309	873.32	-70.51	0.0079	135.08	2.947	845.68	613.4	0.4127	1.38292	0.0000770	23.26	0.002	0.0097
FS17	FanDuctLkg.Fl_O	224.47	4.706	468.12	-18.46	0.0000	665.89	3.972	445.95	2606.7	0.4981	1.40077	0.0000285	224.46	0.006	0.0000
FS171	Bleed15.Fl_O	227.05	4.706	468.72	-18.32	0.0000	673.99	3.848	442.46	2481.9	0.5441	1.40077	0.0000291	227.04	0.007	0.0000
FS172	FanDuct.Fl_O	227.05	4.706	468.72	-18.32	0.0000	673.99	3.848	442.46	2481.9	0.5441	1.40077	0.0000291	227.04	0.007	0.0000
FS173	Byp_Nozz.Fl_O	227.05	4.706	468.72	-18.32	0.0000	673.99	2.947	409.94	2006.9	0.8457	1.40077	0.0000291	227.04	0.007	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	732.97	1.121	0.9043	2497.804	1.0367	0.9059	-1259.8	2276.91	54.77
LPC	84.38	1.524	0.8406	2497.804	1.1525	0.8498	-603.5	6.76	3.33
HPC	53.49	6.044	0.8179	8941.570	1.8116	0.8566	-3291.6	60.99	57.61
HPT	12.08	4.116	0.8726	219.377	1.3628	0.8499	3291.6		
LPT	54.02	2.775	0.8451	70.239	1.2589	0.8253	1863.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	851.64	1.118	0.9062	2473.988	0.0412	0.8607	1.0235	0.9980	0.9905
LPC	70.86	1.491	0.7766	0.660	0.0000	1.1908	1.0692	1.0824	0.0003
HPC	48.64	5.806	0.8263	8703.194	11.0056	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.030	0.8726	1.318	4.0300	12.6299	0.9723	1.0000	0.0003
LPT	0.83	2.335	0.8514	0.790	2.3350	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2556.80	5625.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2789	860.21
FanDuct	0.0000	0.5441	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.6866	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8957.5	1930.0	3291.6
LP_Shaft	2330.6	4198.8	1863.2

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	0.8559	733.31	45.08	9.183
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.2721	733.31	45.08	3.309
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	712.14	39.95	13.506
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	842.84	71.73	26.422
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	712.14	39.95	13.506
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	942.96	96.34	38.692
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	712.14	39.95	13.506

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1000	1.0000	1.0000	2.5842	520.52	-6.18	6.402
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	2.6556	942.96	96.34	37.801
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.3237	942.96	96.34	21.431
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	942.96	96.34	38.692
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	942.96	96.34	38.692
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	942.96	96.34	38.692
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	468.12	-18.46	4.706
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	468.12	-18.46	4.706
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	468.12	-18.46	4.706
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	468.12	-18.46	4.706

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1667.15	0.9995	0.0230	0.18278	0.01066

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.123	0.9801	1.0000	0.9800	613.40	0.413	573.4	417.7
Byp_Nozz	1.597	0.9800	1.0000	0.9800	2006.86	0.846	822.9	5807.2

```
**********************************************************************************************************************************
Date:07/05/13    Time:09:27:02    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 454.76    Stator 1 exit: 461.52    Stator 2 inlet: 470.01    Stator 2 exit: 474.34
            Stator 3 inlet: 483.09    Stator 3 exit: 487.01    Stator 4 inlet: 495.20    Stator 4 exit: 498.51
            Stator 5 inlet: 505.23    Stator 5 exit: 508.11            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.40
Fan Bypass Relative Humidity       1.75
LPC Inlet Relative Humidity        1.56
LPC Exit Relative Humidity         0.15
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          707.26    Fan/LPC Inlet Flow Velocity        178.68
Ambient Static Pressure          3.09    Fan/LPC Inlet Static Pressure        4.25
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   447.01
Additional Water at LPC Exit   0.0000445
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.714	37357.0	18.00	257.06	614.4	1.0902	669.83	8.7256	707.26	9.092	0.772	10.000	1657.3	1566.3	1091.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	257.06	4.339	449.68	-22.87	0.0000	810.62	3.088	407.97	2561.5	0.7140	1.40090	0.0000272	257.05	0.007	0.0000
FS1	Inlet.Fl_O	257.06	4.339	449.68	-22.87	0.0000	810.62	3.981	438.72	4168.2	0.3530	1.40090	0.0000272	257.05	0.007	0.0000
FS12	Splitter.Fl_02	230.63	4.337	449.68	-22.87	0.0000	727.63	3.930	437.15	3531.8	0.3780	1.40090	0.0000272	230.62	0.006	0.0000
FS2	Splitter.Fl_01	26.43	4.337	449.68	-22.87	0.0000	83.39	4.248	447.01	830.5	0.1723	1.40090	0.0000272	26.43	0.001	0.0000
FS14	Fan.Fl_O	230.63	4.848	465.79	-19.01	0.0000	662.46	4.102	444.03	2606.7	0.4945	1.40079	0.0000272	230.62	0.006	0.0000
FS23	LPC.Fl_O	26.43	6.557	516.81	-6.78	0.0000	59.13	6.276	510.38	412.6	0.2509	1.40025	0.0000272	26.43	0.001	0.0000
FS24	VaporIN.Fl_O	26.43	6.557	516.90	-7.02	0.0000	59.14	6.276	510.47	412.6	0.2509	1.40025	0.0000717	26.43	0.002	0.0001
FS25	Bleed2.Fl_O	23.79	6.557	516.90	-7.02	0.0000	53.22	6.332	511.75	412.6	0.2241	1.40025	0.0000717	23.79	0.002	0.0001
FS3	HPC.Fl_O	22.64	39.452	935.48	94.52	0.0000	11.32	34.769	903.16	49.7	0.4307	1.38458	0.0000717	22.63	0.002	0.0001
FS36	Bleed3.Fl_O	17.54	39.452	935.48	94.52	0.0000	8.78	36.762	917.29	49.3	0.3209	1.38458	0.0000717	17.54	0.001	0.0001
FS4	Burner.Fl_O	17.73	38.544	1657.32	82.49	0.0106	12.08	36.397	1633.62	74.6	0.2940	1.33468	0.0000717	17.54	0.001	0.0130
FS45	HPT.Fl_O	23.70	9.404	1095.02	-15.81	0.0079	53.81	8.550	1067.20	265.4	0.3751	1.36925	0.0000717	23.51	0.002	0.0098
FS49	LPT.Fl_O	23.98	3.450	872.21	-70.01	0.0078	132.45	3.278	859.93	860.2	0.2730	1.38301	0.0000717	23.79	0.002	0.0097
FS5	TEGV.Fl_O	23.98	3.450	872.29	-70.01	0.0078	132.45	3.278	860.00	860.2	0.2730	1.38300	0.0000717	23.79	0.002	0.0097
FS8	Core_Nozz.Fl_O	23.98	3.450	872.36	-70.01	0.0078	132.46	3.088	846.01	613.4	0.4028	1.38300	0.0000717	23.79	0.002	0.0097
FS17	FanDuctLkg.Fl_O	230.63	4.848	465.79	-19.01	0.0000	662.46	4.102	444.03	2606.7	0.4945	1.40079	0.0000272	230.62	0.006	0.0000
FS171	Bleed15.Fl_O	233.27	4.848	466.37	-18.88	0.0000	670.47	3.976	440.63	2481.9	0.5399	1.40078	0.0000277	233.27	0.006	0.0000
FS172	FanDuct.Fl_O	233.27	4.848	466.37	-18.88	0.0000	670.47	3.976	440.63	2481.9	0.5399	1.40078	0.0000277	233.27	0.006	0.0000
FS173	Byp_Nozz.Fl_O	233.27	4.848	466.37	-18.88	0.0000	670.47	3.088	409.90	2006.9	0.8289	1.40078	0.0000277	233.27	0.006	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	727.63	1.118	0.9040	2472.475	1.0358	0.9055	-1260.2	2677.24	54.68
LPC	83.39	1.512	0.8407	2472.475	1.1493	0.8497	-601.8	6.67	3.26
HPC	53.22	6.016	0.8174	8933.056	1.8098	0.8562	-3334.7	61.04	57.63
HPT	12.08	4.099	0.8721	219.055	1.3617	0.8494	3334.7		
LPT	53.81	2.726	0.8431	69.571	1.2534	0.8234	1861.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	845.44	1.115	0.9058	2448.900	0.0412	0.8607	1.0235	0.9980	0.9905
LPC	69.76	1.479	0.7754	0.653	0.0000	1.1954	1.0682	1.0842	0.0003
HPC	48.41	5.780	0.8259	8694.906	11.0056	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.013	0.8721	1.316	4.0128	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.298	0.8493	0.783	2.2982	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2561.47	5650.8
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2730	860.21
FanDuct	0.0000	0.5399	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7256	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8917.8	1963.9	3334.7
LP_Shaft	2302.2	4247.8	1861.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8754	727.71	43.75	9.404
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2783	727.71	43.75	3.450
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	706.73	38.67	13.794
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	836.24	70.15	26.952
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	706.73	38.67	13.794
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	935.48	94.52	39.452
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	706.73	38.67	13.794

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6433	516.90	-7.02	6.557
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.7163	935.48	94.52	38.544
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3768	935.48	94.52	21.876
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	935.48	94.52	39.452
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	935.48	94.52	39.452
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	935.48	94.52	39.452
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	465.79	-19.01	4.848
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	465.79	-19.01	4.848
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	465.79	-19.01	4.848
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	465.79	-19.01	4.848

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1657.26	0.9995	0.0230	0.18606	0.01061

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.117	0.9801	1.0000	0.9800	613.40	0.403	559.8	417.1
Byp_Nozz	1.570	0.9800	1.0000	0.9800	2006.86	0.829	806.6	5848.1

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**********************************************************************************************************************************
Date:07/05/13    Time:09:27:18    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 456.41    Stator 1 exit: 462.77    Stator 2 inlet: 470.73    Stator 2 exit: 474.78
            Stator 3 inlet: 482.99    Stator 3 exit: 486.64    Stator 4 inlet: 494.31    Stator 4 exit: 497.39
            Stator 5 inlet: 503.67    Stator 5 exit: 506.33            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.00
Fan Bypass Relative Humidity       2.26
LPC Inlet Relative Humidity        2.00
LPC Exit Relative Humidity         0.22
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          667.90    Fan/LPC Inlet Flow Velocity        173.04
Ambient Static Pressure          3.58    Fan/LPC Inlet Static Pressure        4.74
Ambient Static Temperature     414.42    Fan/LPC Inlet Static Temperature   449.11
Additional Water at LPC Exit   0.0000322
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.669	34281.0	18.00	278.58	669.5	1.0739	719.01	8.8076	667.90	8.757	0.795	10.000	1650.5	1559.4	1088.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	278.58	4.831	451.61	-22.45	0.0000	790.74	3.578	414.42	2577.4	0.6690	1.40088	0.0000348	278.57	0.010	0.0000
FS1	Inlet.Fl_O	278.58	4.831	451.61	-22.45	0.0000	790.74	4.453	441.21	4168.2	0.3430	1.40088	0.0000348	278.57	0.010	0.0000
FS12	Splitter.Fl_02	250.17	4.829	451.61	-22.45	0.0000	710.47	4.399	439.71	3531.8	0.3674	1.40088	0.0000348	250.16	0.009	0.0000
FS2	Splitter.Fl_01	28.40	4.829	451.61	-22.45	0.0000	80.67	4.736	449.11	830.5	0.1665	1.40088	0.0000348	28.40	0.001	0.0000
FS14	Fan.Fl_O	250.17	5.360	466.78	-18.82	0.0000	650.68	4.571	445.97	2606.7	0.4824	1.40078	0.0000348	250.16	0.009	0.0000
FS23	LPC.Fl_O	28.40	7.122	514.69	-7.33	0.0000	58.39	6.825	508.46	412.6	0.2475	1.40028	0.0000348	28.40	0.001	0.0000
FS24	VaporIN.Fl_O	28.40	7.122	514.77	-7.50	0.0000	58.39	6.825	508.53	412.6	0.2475	1.40028	0.0000670	28.40	0.002	0.0001
FS25	Bleed2.Fl_O	25.56	7.122	514.77	-7.50	0.0000	52.55	6.883	509.78	412.6	0.2211	1.40028	0.0000670	25.56	0.002	0.0001
FS3	HPC.Fl_O	24.32	42.305	928.66	92.86	0.0000	11.31	37.301	896.67	49.7	0.4298	1.38497	0.0000670	24.32	0.002	0.0001
FS36	Bleed3.Fl_O	18.85	42.305	928.66	92.86	0.0000	8.76	39.429	910.65	49.3	0.3203	1.38497	0.0000670	18.85	0.001	0.0001
FS4	Burner.Fl_O	19.05	41.330	1650.47	80.87	0.0106	12.08	39.027	1626.86	74.6	0.2940	1.33503	0.0000670	18.85	0.001	0.0130
FS45	HPT.Fl_O	25.47	10.192	1092.43	-16.28	0.0079	53.29	9.287	1065.30	265.4	0.3708	1.36943	0.0000670	25.26	0.002	0.0097
FS49	LPT.Fl_O	25.76	3.941	881.38	-67.55	0.0078	125.23	3.767	870.38	860.2	0.2569	1.38250	0.0000670	25.56	0.002	0.0096
FS5	TEGV.Fl_O	25.76	3.941	881.45	-67.55	0.0078	125.23	3.767	870.45	860.2	0.2569	1.38250	0.0000670	25.56	0.002	0.0096
FS8	Core_Nozz.Fl_O	25.76	3.941	881.52	-67.55	0.0078	125.24	3.578	858.21	613.4	0.3764	1.38249	0.0000670	25.56	0.002	0.0096
FS17	FanDuctLkg.Fl_O	250.17	5.360	466.78	-18.82	0.0000	650.68	4.571	445.97	2606.7	0.4824	1.40078	0.0000348	250.16	0.009	0.0000
FS171	Bleed15.Fl_O	253.01	5.360	467.32	-18.69	0.0000	658.44	4.440	442.79	2481.9	0.5256	1.40078	0.0000351	253.00	0.009	0.0000
FS172	FanDuct.Fl_O	253.01	5.360	467.32	-18.69	0.0000	658.44	4.440	442.79	2481.9	0.5256	1.40078	0.0000351	253.00	0.009	0.0000
FS173	Byp_Nozz.Fl_O	253.01	5.360	467.32	-18.69	0.0000	658.44	3.578	416.27	2006.9	0.7821	1.40078	0.0000351	253.00	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	710.47	1.110	0.9032	2395.792	1.0336	0.9046	-1286.3	5784.67	54.21
LPC	80.67	1.475	0.8416	2395.792	1.1397	0.8501	-607.7	6.41	3.05
HPC	52.55	5.940	0.8161	8911.057	1.8040	0.8550	-3542.1	61.34	57.85
HPT	12.08	4.055	0.8716	218.517	1.3586	0.8490	3542.1		
LPT	53.29	2.586	0.8385	67.638	1.2372	0.8195	1894.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	825.49	1.108	0.9050	2372.948	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	66.44	1.445	0.7718	0.633	0.0000	1.2141	1.0673	1.0904	0.0003
HPC	47.80	5.707	0.8246	8673.494	10.9958	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.970	0.8716	1.313	3.9703	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.193	0.8448	0.761	2.1929	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2577.38	5782.9

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2569	860.21
FanDuct	0.0000	0.5256	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8076	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8877.5	2095.6	3542.1
LP_Shaft	2235.6	4449.7	1894.0

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9408	723.18	42.68	10.192
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2991	723.18	42.68	3.941
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.44	37.66	14.862
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	830.51	68.77	28.935
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.44	37.66	14.862
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	928.66	92.86	42.305
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.44	37.66	14.862

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.8405	514.77	-7.50	7.122
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.9190	928.66	92.86	41.330
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.5541	928.66	92.86	23.519
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	928.66	92.86	42.305
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	928.66	92.86	42.305
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	928.66	92.86	42.305
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	466.78	-18.82	5.360
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	466.78	-18.82	5.360
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	466.78	-18.82	5.360
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	466.78	-18.82	5.360

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1650.41	0.9995	0.0230	0.19972	0.01060

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.102	0.9801	1.0000	0.9800	613.40	0.376	526.7	421.8
Byp_Nozz	1.498	0.9800	1.0000	0.9800	2006.86	0.782	766.9	6030.7

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**********************************************************************************************************************************
Date:07/05/13    Time:09:27:35    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 14/ 28/ 1/12    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 465.04    Stator 1 exit: 470.56    Stator 2 inlet: 477.37    Stator 2 exit: 480.66
            Stator 3 inlet: 487.79    Stator 3 exit: 490.68    Stator 4 inlet: 497.38    Stator 4 exit: 499.77
            Stator 5 inlet: 505.17    Stator 5 exit: 507.19            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.96
Fan Bypass Relative Humidity       3.12
LPC Inlet Relative Humidity        2.83
LPC Exit Relative Humidity         0.47
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          617.99    Fan/LPC Inlet Flow Velocity        174.99
Ambient Static Pressure          4.36    Fan/LPC Inlet Static Pressure        5.49
Ambient Static Temperature     429.58    Fan/LPC Inlet Static Temperature   458.86
Additional Water at LPC Exit   0.0000397

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.608   30029.0    18.00    305.09      728.9    1.0766     784.71    8.3707    617.99     8.197     0.828         10.000    1654.9   1563.1   1093.8


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht      FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O          305.09     5.595    461.42    -20.30   0.0000    755.82     4.358    429.58    2596.2  0.6080   1.40081   0.0000681    305.07    0.021    0.0001
FS1   Inlet.Fl_O            305.09     5.595    461.42    -20.30   0.0000    755.82     5.199    451.82    4168.2  0.3256   1.40081   0.0000681    305.07    0.021    0.0001
FS12  Splitter.Fl_02        272.54     5.592    461.42    -20.30   0.0000    675.50     5.147    450.59    3531.8  0.3462   1.40081   0.0000681    272.52    0.019    0.0001
FS2   Splitter.Fl_01         32.56     5.592    461.42    -20.30   0.0000     80.70     5.485    458.86     830.5  0.1666   1.40081   0.0000681     32.56    0.002    0.0001
FS14  Fan.Fl_O              272.54     6.139    475.25    -16.98   0.0000    624.50     5.321    456.19    2606.7  0.4566   1.40070   0.0000681    272.52    0.019    0.0001
FS23  LPC.Fl_O               32.56     7.826    515.84     -7.25   0.0000     60.97     7.468    508.98     412.6  0.2594   1.40026   0.0000681     32.56    0.002    0.0001
FS24  VaporIN.Fl_O           32.56     7.826    515.92     -7.46   0.0000     60.98     7.468    509.07     412.6  0.2594   1.40025   0.0001078     32.56    0.004    0.0001
FS25  Bleed2.Fl_O            27.68     7.826    515.92     -7.46   0.0000     51.83     7.571    511.07     412.6  0.2179   1.40025   0.0001078     27.67    0.003    0.0001
FS3   HPC.Fl_O               26.33    45.862    927.46     92.34   0.0000     11.28    40.463    895.68      49.7  0.4287   1.38504   0.0001078     26.33    0.003    0.0001
FS36  Bleed3.Fl_O            20.41    45.862    927.46     92.34   0.0000      8.74    42.759    909.56      49.3  0.3195   1.38504   0.0001078     20.41    0.002    0.0001
FS4   Burner.Fl_O            20.63    44.806   1654.85     80.25   0.0107     12.08    42.309   1631.18      74.6  0.2940   1.33474   0.0001078     20.41    0.002    0.0131
FS45  HPT.Fl_O               27.57    11.202   1098.00    -16.30   0.0080     52.62    10.234   1071.52     265.4  0.3654   1.36902   0.0001078     27.35    0.003    0.0099
FS49  LPT.Fl_O               27.89     4.717    904.54    -63.23   0.0079    114.77     4.543    895.19     860.2  0.2340   1.38113   0.0001078     27.67    0.003    0.0098
FS5   TEGV.Fl_O              27.89     4.717    904.61    -63.23   0.0079    114.77     4.543    895.26     860.2  0.2340   1.38112   0.0001078     27.67    0.003    0.0098
FS8   Core_Nozz.Fl_O         27.89     4.717    904.68    -63.23   0.0079    114.78     4.358    885.15     613.4  0.3400   1.38112   0.0001078     27.67    0.003    0.0098
FS17  FanDuctLkg.Fl_O       272.54     6.139    475.25    -16.98   0.0000    624.50     5.321    456.19    2606.7  0.4566   1.40070   0.0000681    272.52    0.019    0.0001
FS171 Bleed15.Fl_O          277.42     6.139    475.96    -16.82   0.0000    636.17     5.173    453.22    2481.9  0.5005   1.40070   0.0000688    277.40    0.019    0.0001
FS172 FanDuct.Fl_O          277.42     6.139    475.96    -16.82   0.0000    636.17     5.173    453.22    2481.9  0.5005   1.40070   0.0000688    277.40    0.019    0.0001
FS173 Byp_Nozz.Fl_O         277.42     6.139    475.96    -16.82   0.0000    636.17     4.358    431.52    2006.9  0.7168   1.40070   0.0000688    277.40    0.019    0.0001

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff        Nc       TR    efPoly       pwr       SMN      SMW
Fan       675.50   1.098    0.9021  2249.411   1.0300    0.9034   -1278.1  -9306.19    52.72
LPC        80.70   1.399    0.8552  2249.411   1.1179    0.8619    -601.0      5.96     2.63
HPC        51.83   5.860    0.8147  8887.489   1.7977    0.8536   -3813.0     61.61    58.03
HPT        12.08   4.000    0.8718   217.895   1.3544    0.8495    3812.9
LPT        52.62   2.375    0.8303    64.028   1.2114    0.8124    1879.1

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap     NcMap    R/Parm    s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan        784.86   1.096   0.9039  2227.963    0.0416     0.8607    1.0235    0.9980    0.9905
LPC         60.32   1.382   0.7655     0.594    0.0000     1.3379    1.0459    1.1172    0.0003
HPC         47.14   5.631   0.8231  8650.554   10.9887     1.0995    1.0494    0.9898    0.9733
HPT          0.96   3.917   0.8718     1.310    3.9166    12.6299    0.9723    1.0000    0.0003
LPT          0.81   2.034   0.8365     0.720    2.0342    65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2596.15	5860.2
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2340	860.21
FanDuct	0.0000	0.5005	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.3707	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8863.9	2259.3	3812.9
LP_Shaft	2121.6	4651.8	1879.1

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0185	723.14	42.44	11.202
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3238	723.14	42.44	4.717
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.52	37.45	16.194
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	829.87	68.38	31.408
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.52	37.45	16.194
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	927.46	92.34	45.862
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.52	37.45	16.194

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1500	1.0000	1.0000	4.8839	515.92	-7.46	7.826
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.1600	927.46	92.34	44.806
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.7651	927.46	92.34	25.585
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	927.46	92.34	45.862
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	927.46	92.34	45.862
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	927.46	92.34	45.862
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	475.25	-16.98	6.139
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.25	-16.98	6.139
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	475.25	-16.98	6.139
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.25	-16.98	6.139

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1654.79	0.9995	0.0230	0.21797	0.01068

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.082	0.9801	1.0000	0.9800	613.40	0.340	482.9	418.6
Byp_Nozz	1.409	0.9800	1.0000	0.9800	2006.86	0.717	715.6	6170.4

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**********************************************************************************************************************************
Date:07/05/13    Time:09:27:57    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 22/ 36/ 1/20    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 473.11    Stator 1 exit: 477.17    Stator 2 inlet: 481.78    Stator 2 exit: 483.58
            Stator 3 inlet: 488.72    Stator 3 exit: 490.11    Stator 4 inlet: 495.04    Stator 4 exit: 496.04
            Stator 5 inlet: 499.63    Stator 5 exit: 500.35            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.82
Fan Bypass Relative Humidity       3.94
LPC Inlet Relative Humidity        3.82
LPC Exit Relative Humidity         1.20
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          571.13    Fan/LPC Inlet Flow Velocity        194.56
Ambient Static Pressure          5.30    Fan/LPC Inlet Static Pressure        6.36
Ambient Static Temperature     445.14    Fan/LPC Inlet Static Temperature   469.17
Additional Water at LPC Exit   0.0000436
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.552	25666.0	18.00	330.54	748.3	1.1193	837.60	7.0492	571.13	7.334	0.859	10.000	1665.6	1571.6	1105.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	330.54	6.516	472.33	-18.03	0.0000	711.38	5.297	445.14	2595.0	0.5520	1.40072	0.0001274	330.50	0.042	0.0001
FS1	Inlet.Fl_O	330.54	6.516	472.33	-18.03	0.0000	711.38	6.111	463.74	4168.2	0.3040	1.40072	0.0001274	330.50	0.042	0.0001
FS12	Splitter.Fl_02	289.48	6.513	472.33	-18.03	0.0000	623.31	6.078	463.07	3531.8	0.3157	1.40072	0.0001274	289.44	0.037	0.0001
FS2	Splitter.Fl_01	41.06	6.513	472.33	-18.03	0.0000	88.42	6.362	469.17	830.5	0.1832	1.40072	0.0001274	41.06	0.005	0.0001
FS14	Fan.Fl_O	289.48	7.057	484.46	-15.12	0.0000	582.63	6.258	468.09	2606.7	0.4177	1.40061	0.0001274	289.44	0.037	0.0001
FS23	LPC.Fl_O	41.06	8.206	511.58	-8.61	0.0000	73.04	7.654	501.50	412.6	0.3168	1.40031	0.0001274	41.06	0.005	0.0001
FS24	VaporIN.Fl_O	41.07	8.206	511.67	-8.85	0.0000	73.05	7.654	501.59	412.6	0.3169	1.40030	0.0001709	41.06	0.007	0.0002
FS25	Bleed2.Fl_O	28.75	8.206	511.67	-8.85	0.0000	51.14	7.946	506.99	412.6	0.2148	1.40030	0.0001709	28.74	0.005	0.0002
FS3	HPC.Fl_O	27.35	47.792	918.60	89.79	0.0000	11.19	42.271	887.70	49.7	0.4243	1.38554	0.0001709	27.35	0.005	0.0002
FS36	Bleed3.Fl_O	21.20	47.792	918.60	89.79	0.0000	8.67	44.614	901.16	49.3	0.3166	1.38554	0.0001709	21.19	0.004	0.0002
FS4	Burner.Fl_O	21.43	46.691	1665.62	77.40	0.0110	12.09	44.088	1641.82	74.6	0.2942	1.33401	0.0001709	21.19	0.004	0.0136
FS45	HPT.Fl_O	28.64	12.030	1109.37	-17.89	0.0082	51.17	11.053	1084.34	265.4	0.3537	1.36811	0.0001709	28.41	0.005	0.0102
FS49	LPT.Fl_O	28.98	5.626	937.03	-59.60	0.0081	101.74	5.464	929.54	860.2	0.2061	1.37905	0.0001709	28.74	0.005	0.0101
FS5	TEGV.Fl_O	28.98	5.626	937.10	-59.60	0.0081	101.75	5.464	929.61	860.2	0.2061	1.37904	0.0001709	28.74	0.005	0.0101
FS8	Core_Nozz.Fl_O	28.98	5.626	937.18	-59.60	0.0081	101.75	5.297	921.76	613.4	0.2968	1.37904	0.0001709	28.74	0.005	0.0101
FS17	FanDuctLkg.Fl_O	289.48	7.057	484.46	-15.12	0.0000	582.63	6.258	468.09	2606.7	0.4177	1.40061	0.0001274	289.44	0.037	0.0001
FS171	Bleed15.Fl_O	301.80	7.057	485.57	-14.86	0.0000	608.12	6.063	464.95	2481.9	0.4705	1.40060	0.0001291	301.76	0.039	0.0001
FS172	FanDuct.Fl_O	301.80	7.057	485.57	-14.86	0.0000	608.12	6.063	464.95	2481.9	0.4705	1.40060	0.0001291	301.76	0.039	0.0001
FS173	Byp_Nozz.Fl_O	301.80	7.057	485.57	-14.86	0.0000	608.12	5.297	447.31	2006.9	0.6533	1.40060	0.0001291	301.76	0.039	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	623.31	1.083	0.9032	2044.668	1.0257	0.9043	-1191.1	-2766.16	49.88
LPC	88.42	1.260	0.8218	2044.668	1.0831	0.8276	-546.8	6.38	2.41
HPC	51.14	5.824	0.8139	8865.693	1.7953	0.8529	-3914.5	60.72	57.10
HPT	12.09	3.881	0.8732	215.761	1.3457	0.8517	3914.5		
LPT	51.17	2.138	0.8210	58.581	1.1810	0.8047	1737.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	724.23	1.082	0.9050	2025.172	0.0425	0.8607	1.0235	0.9980	0.9905
LPC	53.47	1.311	0.7607	0.540	0.0000	1.6537	0.8353	1.0803	0.0003
HPC	46.51	5.597	0.8223	8629.340	11.0519	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.801	0.8732	1.297	3.8014	12.6299	0.9723	1.0000	0.0003
LPT	0.78	1.856	0.8271	0.659	1.8561	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2595.01	5867.5
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2061	860.21
FanDuct	0.0000	0.4705	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.0492	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8805.7	2334.8	3914.5
LP_Shaft	1951.2	4678.1	1737.9

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0579	716.52	40.47	12.030
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3363	716.52	40.47	5.626
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	696.13	35.54	16.915
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	822.06	66.12	32.749
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	696.13	35.54	16.915
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	918.60	89.79	47.792
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	696.13	35.54	16.915

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.3000	1.0000	1.0000	12.3200	511.67	-8.85	8.206
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.2823	918.60	89.79	46.691
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.8721	918.60	89.79	26.865
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	918.60	89.79	47.792
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	918.60	89.79	47.792
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	918.60	89.79	47.792
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	484.46	-15.12	7.057
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	484.46	-15.12	7.057
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	484.46	-15.12	7.057
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	484.46	-15.12	7.057

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1665.56	0.9995	0.0230	0.23267	0.01098

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.062	0.9801	1.0000	0.9800	613.40	0.297	429.9	387.2
Byp_Nozz	1.332	0.9800	1.0000	0.9800	2006.86	0.653	664.0	6228.6

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**********************************************************************************************************************************
Date:07/05/13    Time:09:28:20    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 26/ 40/ 1/24    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 486.26    Stator 1 exit: 489.21    Stator 2 inlet: 491.94    Stator 2 exit: 492.70
            Stator 3 inlet: 496.03    Stator 3 exit: 496.35    Stator 4 inlet: 499.60    Stator 4 exit: 499.62
            Stator 5 inlet: 501.46    Stator 5 exit: 501.30            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.85
Fan Bypass Relative Humidity       4.91
LPC Inlet Relative Humidity        5.02
LPC Exit Relative Humidity         2.62
HPC Relative Humidity              0.01
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          518.26    Fan/LPC Inlet Flow Velocity        204.34
Ambient Static Pressure          6.74    Fan/LPC Inlet Static Pressure        7.74
Ambient Static Temperature     465.18    Fan/LPC Inlet Static Temperature   484.08
Additional Water at LPC Exit   0.0000541
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.490	20047.0	18.00	368.15	831.7	1.1214	932.67	6.2370	518.26	6.453	0.890	10.000	1698.7	1600.6	1135.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	368.15	7.943	487.56	-15.16	0.0000	660.37	6.740	465.18	2616.0	0.4900	1.40057	0.0002627	368.05	0.097	0.0003
FS1	Inlet.Fl_O	368.15	7.943	487.56	-15.16	0.0000	660.37	7.522	480.02	4168.2	0.2799	1.40057	0.0002627	368.05	0.097	0.0003
FS12	Splitter.Fl_02	317.28	7.939	487.56	-15.16	0.0000	569.40	7.503	479.73	3531.8	0.2854	1.40057	0.0002627	317.19	0.083	0.0003
FS2	Splitter.Fl_01	50.87	7.939	487.56	-15.16	0.0000	91.29	7.743	484.08	830.5	0.1894	1.40057	0.0002627	50.86	0.013	0.0003
FS14	Fan.Fl_O	317.28	8.512	498.39	-12.56	0.0000	536.97	7.712	484.52	2606.7	0.3780	1.40045	0.0002627	317.19	0.083	0.0003
FS23	LPC.Fl_O	50.87	9.078	515.18	-8.53	0.0000	82.08	8.289	501.97	412.6	0.3626	1.40024	0.0002627	50.86	0.013	0.0003
FS24	VaporIN.Fl_O	50.87	9.078	515.28	-8.82	0.0000	82.09	8.289	502.06	412.6	0.3627	1.40023	0.0003168	50.86	0.016	0.0003
FS25	Bleed2.Fl_O	30.52	9.078	515.28	-8.82	0.0000	49.25	8.812	510.92	412.6	0.2065	1.40023	0.0003168	30.51	0.010	0.0003
FS3	HPC.Fl_O	29.04	51.262	917.93	88.80	0.0000	11.08	45.481	887.82	49.7	0.4188	1.38556	0.0003168	29.03	0.009	0.0003
FS36	Bleed3.Fl_O	22.51	51.262	917.93	88.80	0.0000	8.58	47.929	900.90	49.3	0.3129	1.38556	0.0003168	22.50	0.007	0.0003
FS4	Burner.Fl_O	22.77	50.081	1698.67	75.82	0.0115	12.09	47.287	1674.48	74.6	0.2946	1.33204	0.0003168	22.50	0.007	0.0143
FS45	HPT.Fl_O	30.43	13.553	1140.38	-18.27	0.0086	48.92	12.555	1117.24	265.4	0.3361	1.36580	0.0003168	30.16	0.010	0.0108
FS49	LPT.Fl_O	30.78	7.047	987.09	-55.31	0.0085	88.56	6.895	981.21	860.2	0.1785	1.37572	0.0003168	30.51	0.010	0.0107
FS5	TEGV.Fl_O	30.78	7.047	987.16	-55.31	0.0085	88.56	6.895	981.28	860.2	0.1785	1.37571	0.0003168	30.51	0.010	0.0107
FS8	Core_Nozz.Fl_O	30.78	7.047	987.23	-55.31	0.0085	88.56	6.740	975.28	613.4	0.2552	1.37571	0.0003168	30.51	0.010	0.0107
FS17	FanDuctLkg.Fl_O	317.28	8.512	498.39	-12.56	0.0000	536.97	7.712	484.52	2606.7	0.3780	1.40045	0.0002627	317.19	0.083	0.0003
FS171	Bleed15.Fl_O	337.63	8.512	499.41	-12.34	0.0000	571.99	7.477	481.23	2481.9	0.4343	1.40044	0.0002660	337.54	0.090	0.0003
FS172	FanDuct.Fl_O	337.63	8.512	499.41	-12.34	0.0000	571.99	7.477	481.23	2481.9	0.4343	1.40044	0.0002660	337.54	0.090	0.0003
FS173	Byp_Nozz.Fl_O	337.63	8.512	499.41	-12.34	0.0000	571.99	6.740	467.16	2006.9	0.5870	1.40044	0.0002660	337.54	0.090	0.0003

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	569.40	1.072	0.9054	1848.716	1.0222	0.9063	-1165.9	-1881.95	46.42
LPC	91.29	1.143	0.6893	1848.716	1.0567	0.6952	-476.8	6.97	2.19
HPC	49.25	5.647	0.8099	8804.946	1.7814	0.8491	-4113.5	60.54	56.71
HPT	12.09	3.695	0.8753	212.936	1.3307	0.8549	4113.5		
LPT	48.92	1.923	0.8141	53.078	1.1519	0.7997	1642.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	661.59	1.070	0.9072	1831.089	0.0438	0.8607	1.0235	0.9980	0.9905
LPC	47.04	1.247	0.7558	0.488	0.0000	1.9411	0.5802	0.9120	0.0003
HPC	44.80	5.428	0.8182	8570.212	11.0889	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.621	0.8752	1.280	3.6206	12.6299	0.9723	1.0000	0.0003
LPT	0.75	1.694	0.8201	0.597	1.6943	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2615.99	5930.1
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1785	860.21
FanDuct	0.0000	0.4343	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.2370	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8776.1	2461.7	4113.5
LP_Shaft	1792.4	4813.5	1642.7

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.1233	717.97	39.99	13.553
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3571	717.97	39.99	7.047
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	697.79	35.11	18.358
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	822.39	65.37	35.232
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	697.79	35.11	18.358
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	917.93	88.80	51.262
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	697.79	35.11	18.358

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	20.3492	515.28	-8.82	9.078
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.4852	917.93	88.80	50.081
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	3.0496	917.93	88.80	29.187
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	917.93	88.80	51.262
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	917.93	88.80	51.262
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	917.93	88.80	51.262
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	498.39	-12.56	8.512
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	498.39	-12.56	8.512
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	498.39	-12.56	8.512
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	498.39	-12.56	8.512

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1698.60	0.9995	0.0230	0.25908	0.01151

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.046	0.9801	1.0000	0.9800	613.40	0.255	379.7	363.3
Byp_Nozz	1.263	0.9800	1.0000	0.9800	2006.86	0.587	609.7	6398.5

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**********************************************************************************************************************************
Date:07/05/13    Time:09:28:48    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 23/ 51/ 2/20    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 500.26    Stator 1 exit: 502.62    Stator 2 inlet: 504.93    Stator 2 exit: 505.65
            Stator 3 inlet: 508.35    Stator 3 exit: 508.75    Stator 4 inlet: 511.35    Stator 4 exit: 511.52
            Stator 5 inlet: 513.11    Stator 5 exit: 513.12            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         6.53
Fan Bypass Relative Humidity       5.96
LPC Inlet Relative Humidity        5.71
LPC Exit Relative Humidity         3.40
HPC Relative Humidity              0.01
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          479.99    Fan/LPC Inlet Flow Velocity        173.49
Ambient Static Pressure          8.15    Fan/LPC Inlet Static Pressure        9.17
Ambient Static Temperature     481.63    Fan/LPC Inlet Static Temperature   498.31
Additional Water at LPC Exit   0.0000738
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.446	15435.0	18.00	386.68	641.2	1.3788	884.08	6.7788	479.99	5.288	0.902	10.000	1649.9	1554.0	1125.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	386.68	9.342	500.81	-13.05	0.0000	597.73	8.149	481.63	2540.9	0.4460	1.40040	0.0004484	386.51	0.173	0.0004
FS1	Inlet.Fl_O	386.68	9.342	500.81	-13.05	0.0000	597.73	8.941	494.57	4168.2	0.2511	1.40040	0.0004484	386.51	0.173	0.0004
FS12	Splitter.Fl_02	336.97	9.337	500.81	-13.05	0.0000	521.15	8.912	494.17	3531.8	0.2590	1.40040	0.0004484	336.82	0.151	0.0004
FS2	Splitter.Fl_01	49.71	9.337	500.81	-13.05	0.0000	76.88	9.175	498.31	830.5	0.1585	1.40040	0.0004484	49.69	0.022	0.0004
FS14	Fan.Fl_O	336.97	9.813	508.79	-11.14	0.0000	499.82	9.027	496.79	2606.7	0.3474	1.40030	0.0004484	336.82	0.151	0.0004
FS23	LPC.Fl_O	49.71	10.431	523.17	-7.69	0.0000	70.34	9.784	513.69	412.6	0.3037	1.40011	0.0004484	49.69	0.022	0.0004
FS24	VaporIN.Fl_O	49.71	10.431	523.30	-8.08	0.0000	70.35	9.784	513.82	412.6	0.3038	1.40010	0.0005221	49.69	0.026	0.0005
FS25	Bleed2.Fl_O	29.83	10.431	523.30	-8.08	0.0000	42.21	10.209	520.09	412.6	0.1758	1.40010	0.0005221	29.81	0.016	0.0005
FS3	HPC.Fl_O	28.38	49.399	887.67	80.18	0.0000	11.05	43.866	858.67	49.7	0.4171	1.38722	0.0005221	28.37	0.015	0.0005
FS36	Bleed3.Fl_O	22.00	49.399	887.67	80.18	0.0000	8.56	46.207	871.25	49.3	0.3117	1.38722	0.0005221	21.98	0.011	0.0005
FS4	Burner.Fl_O	22.24	48.261	1649.87	67.68	0.0112	12.08	45.574	1626.30	74.6	0.2940	1.33459	0.0005221	21.98	0.011	0.0141
FS45	HPT.Fl_O	29.72	14.273	1130.09	-17.22	0.0083	45.18	13.390	1110.87	265.4	0.3069	1.36661	0.0005221	29.46	0.015	0.0107
FS49	LPT.Fl_O	30.07	8.396	1006.05	-46.91	0.0082	73.31	8.272	1002.00	860.2	0.1469	1.37466	0.0005221	29.81	0.016	0.0106
FS5	TEGV.Fl_O	30.07	8.396	1006.13	-46.91	0.0082	73.32	8.272	1002.07	860.2	0.1469	1.37465	0.0005221	29.81	0.016	0.0106
FS8	Core_Nozz.Fl_O	30.07	8.396	1006.20	-46.91	0.0082	73.32	8.149	998.04	613.5	0.2087	1.37465	0.0005221	29.81	0.016	0.0106
FS17	FanDuctLkg.Fl_O	336.97	9.813	508.79	-11.14	0.0000	499.82	9.027	496.79	2606.7	0.3474	1.40030	0.0004484	336.82	0.151	0.0004
FS171	Bleed15.Fl_O	356.86	9.813	509.60	-10.97	0.0000	529.73	8.814	494.19	2481.9	0.3947	1.40029	0.0004525	356.70	0.161	0.0005
FS172	FanDuct.Fl_O	356.86	9.813	509.60	-10.97	0.0000	529.73	8.814	494.19	2481.9	0.3947	1.40029	0.0004525	356.70	0.161	0.0005
FS173	Byp_Nozz.Fl_O	356.86	9.813	509.60	-10.97	0.0000	529.73	8.149	483.23	2006.9	0.5220	1.40029	0.0004525	356.70	0.161	0.0005

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	521.15	1.051	0.8982	1610.128	1.0159	0.8989	-912.4	-1526.11	44.72
LPC	76.88	1.117	0.7204	1610.128	1.0447	0.7248	-377.3	8.26	1.96
HPC	42.21	4.736	0.7955	8540.487	1.6963	0.8340	-3634.6	68.26	63.03
HPT	12.08	3.381	0.8666	211.198	1.3031	0.8466	3634.5		
LPT	45.18	1.700	0.8004	47.065	1.1197	0.7881	1289.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	605.53	1.050	0.9000	1594.776	0.0442	0.8607	1.0235	0.9980	0.9905
LPC	39.70	1.184	0.7480	0.425	0.0000	1.9366	0.6356	0.9631	0.0003
HPC	38.39	4.560	0.8038	8312.803	10.7600	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.315	0.8666	1.269	3.3153	12.6299	0.9723	1.0000	0.0003
LPT	0.69	1.527	0.8063	0.529	1.5265	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2540.86	5768.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1469	860.21
FanDuct	0.0000	0.3947	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.7788	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8578.6	2225.2	3634.5
LP_Shaft	1582.2	4281.4	1289.8

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0977	706.56	36.05	14.273
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3490	706.56	36.05	8.396
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	688.31	31.64	19.004
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	801.09	59.00	34.591
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	688.31	31.64	19.004
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	887.67	80.18	49.399
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	688.31	31.64	19.004

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	19.8855	523.30	-8.08	10.431
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.4058	887.67	80.18	48.261
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.9801	887.67	80.18	28.820
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	887.67	80.18	49.399
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	887.67	80.18	49.399
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	887.67	80.18	49.399
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	508.79	-11.14	9.813
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	508.79	-11.14	9.813
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	508.79	-11.14	9.813
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	508.79	-11.14	9.813

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1649.80	0.9995	0.0230	0.24558	0.01117

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.030	0.9802	1.0000	0.9800	613.40	0.209	314.0	293.5
Byp_Nozz	1.204	0.9800	1.0000	0.9800	2006.86	0.522	551.5	6116.5

50µm, ISA +36R

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**********************************************************************************************************************************
Date:07/05/13    Time:09:37:23    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 483.67    Stator 1 exit: 491.43    Stator 2 inlet: 501.20    Stator 2 exit: 506.18
            Stator 3 inlet: 516.28    Stator 3 exit: 520.81    Stator 4 inlet: 530.25    Stator 4 exit: 534.12
            Stator 5 inlet: 541.87    Stator 5 exit: 545.25            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.97
Fan Bypass Relative Humidity       1.41
LPC Inlet Relative Humidity        1.30
LPC Exit Relative Humidity         0.13
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        192.96
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   474.82
Additional Water at LPC Exit   0.0000859
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	252.16	617.7	1.1451	707.33	8.5627	789.49	9.518	0.736	10.000	1759.5	1664.7	1158.4

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	252.16	4.267	477.92	-16.44	0.0000	833.71	2.854	425.97	2543.5	0.7800	1.40068	0.0000851	252.14	0.021	0.0001
FS1	Inlet.Fl_O	252.16	4.267	477.92	-16.44	0.0000	833.71	3.892	465.50	4168.2	0.3649	1.40068	0.0000851	252.14	0.021	0.0001
FS12	Splitter.Fl_02	225.79	4.265	477.92	-16.44	0.0000	746.90	3.839	463.77	3531.8	0.3902	1.40068	0.0000851	225.77	0.019	0.0001
FS2	Splitter.Fl_01	26.37	4.265	477.92	-16.44	0.0000	87.23	4.169	474.82	830.5	0.1806	1.40068	0.0000851	26.37	0.002	0.0001
FS14	Fan.Fl_O	225.79	4.817	496.63	-11.96	0.0000	674.07	4.042	472.33	2606.7	0.5067	1.40049	0.0000851	225.77	0.019	0.0001
FS23	LPC.Fl_O	26.37	6.654	555.04	2.06	0.0000	60.24	6.358	547.86	412.6	0.2561	1.39968	0.0000851	26.37	0.002	0.0001
FS24	VaporIN.Fl_O	26.37	6.654	555.19	1.60	0.0000	60.26	6.358	548.00	412.6	0.2561	1.39966	0.0001710	26.37	0.005	0.0002
FS25	Bleed2.Fl_O	23.73	6.654	555.19	1.60	0.0000	54.23	6.416	549.44	412.6	0.2287	1.39966	0.0001710	23.73	0.004	0.0002
FS3	HPC.Fl_O	22.58	40.611	1006.37	111.52	0.0000	11.38	35.727	971.40	49.7	0.4343	1.38031	0.0001710	22.58	0.004	0.0002
FS36	Bleed3.Fl_O	17.50	40.611	1006.37	111.52	0.0000	8.82	37.809	986.71	49.3	0.3233	1.38031	0.0001710	17.50	0.003	0.0002
FS4	Burner.Fl_O	17.70	39.676	1759.47	98.62	0.0112	12.07	37.468	1734.63	74.6	0.2944	1.32945	0.0001710	17.50	0.003	0.0139
FS45	HPT.Fl_O	23.65	9.522	1162.57	-7.79	0.0084	54.65	8.626	1132.22	265.4	0.3829	1.36454	0.0001710	23.45	0.004	0.0104
FS49	LPT.Fl_O	23.93	3.261	910.27	-69.74	0.0083	142.85	3.070	895.22	860.2	0.2970	1.38052	0.0001710	23.73	0.004	0.0103
FS5	TEGV.Fl_O	23.93	3.261	910.34	-69.74	0.0083	142.86	3.070	895.30	860.2	0.2971	1.38052	0.0001710	23.73	0.004	0.0103
FS8	Core_Nozz.Fl_O	23.93	3.261	910.42	-69.74	0.0083	142.86	2.854	877.48	613.4	0.4435	1.38051	0.0001710	23.73	0.004	0.0103
FS17	FanDuctLkg.Fl_O	225.79	4.817	496.63	-11.96	0.0000	674.07	4.042	472.33	2606.7	0.5067	1.40049	0.0000851	225.77	0.019	0.0001
FS171	Bleed15.Fl_O	228.43	4.817	497.31	-11.80	0.0000	682.41	3.908	468.45	2481.9	0.5546	1.40048	0.0000861	228.41	0.020	0.0001
FS172	FanDuct.Fl_O	228.43	4.817	497.31	-11.80	0.0000	682.41	3.908	468.45	2481.9	0.5546	1.40048	0.0000861	228.41	0.020	0.0001
FS173	Byp_Nozz.Fl_O	228.43	4.817	497.31	-11.80	0.0000	682.41	2.854	428.14	2006.9	0.8978	1.40048	0.0000861	228.41	0.020	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	746.90	1.130	0.9055	2568.150	1.0391	0.9071	-1432.7	1610.34	54.83
LPC	87.23	1.560	0.8405	2568.150	1.1614	0.8502	-690.1	6.97	3.73
HPC	54.23	6.103	0.8187	8965.332	1.8127	0.8573	-3601.9	61.35	58.03
HPT	12.07	4.167	0.8772	221.131	1.3648	0.8551	3601.9		
LPT	54.65	2.920	0.8556	72.301	1.2754	0.8360	2122.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	867.82	1.127	0.9073	2543.663	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	73.90	1.522	0.7799	0.678	0.0000	1.1803	1.0736	1.0777	0.0003
HPC	49.32	5.862	0.8271	8726.322	10.9744	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.079	0.8772	1.329	4.0790	12.6299	0.9723	1.0000	0.0003
LPT	0.84	2.444	0.8620	0.813	2.4438	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2543.48	6187.5
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2970	860.21
FanDuct	0.0000	0.5546	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.5627	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9275.6	2039.5	3601.9
LP_Shaft	2465.2	4522.8	2122.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8734	782.83	56.56	9.522
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2777	782.83	56.56	3.261
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	760.21	51.06	14.125
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	899.72	85.14	27.707
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	760.21	51.06	14.125
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	1006.37	111.52	40.611
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	760.21	51.06	14.125

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6372	555.19	1.60	6.654
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.7100	1006.37	111.52	39.676
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3713	1006.37	111.52	22.428
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1006.37	111.52	40.611
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1006.37	111.52	40.611
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1006.37	111.52	40.611
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	496.63	-11.96	4.817
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	496.63	-11.96	4.817
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	496.63	-11.96	4.817
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	496.63	-11.96	4.817

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1759.41	0.9995	0.0230	0.19648	0.01123

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.143	0.9801	1.0000	0.9800	613.40	0.443	627.2	466.5
Byp_Nozz	1.688	0.9800	1.0000	0.9800	2006.86	0.898	892.8	6338.7

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**********************************************************************************************************************************
Date:07/05/13    Time:09:37:38    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 476.90    Stator 1 exit: 484.18    Stator 2 inlet: 493.31    Stator 2 exit: 497.97
            Stator 3 inlet: 507.40    Stator 3 exit: 511.62    Stator 4 inlet: 520.44    Stator 4 exit: 524.02
            Stator 5 inlet: 531.26    Stator 5 exit: 534.37            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.46
Fan Bypass Relative Humidity       1.80
LPC Inlet Relative Humidity        1.64
LPC Exit Relative Humidity         0.18
HPC Relative Humidity              0.00
Drop Diameter                 0.0000500    Inlet Length                        40.00
Ambient Flow Velocity            738.88    Fan/LPC Inlet Flow Velocity        186.02
Ambient Static Pressure            2.95    Fan/LPC Inlet Static Pressure        4.11
Ambient Static Temperature       425.97    Fan/LPC Inlet Static Temperature   468.59
Additional Water at LPC Exit     0.0000765
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.730	38334.0	36.00	245.32	607.1	1.1099	673.82	8.6594	738.88	9.232	0.764	10.000	1731.9	1637.7	1141.6

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	245.32	4.201	471.48	-17.97	0.0000	818.13	2.947	425.97	2560.6	0.7300	1.40073	0.0000824	245.29	0.020	0.0001
FS1	Inlet.Fl_O	245.32	4.201	471.48	-17.97	0.0000	818.13	3.847	459.74	4168.2	0.3569	1.40073	0.0000824	245.29	0.020	0.0001
FS12	Splitter.Fl_02	219.92	4.199	471.48	-17.97	0.0000	733.80	3.797	458.09	3531.8	0.3819	1.40073	0.0000824	219.90	0.018	0.0001
FS2	Splitter.Fl_01	25.40	4.199	471.48	-17.97	0.0000	84.74	4.110	468.59	830.5	0.1752	1.40073	0.0000824	25.39	0.002	0.0001
FS14	Fan.Fl_O	219.92	4.711	488.91	-13.79	0.0000	666.03	3.976	465.75	2606.7	0.4982	1.40058	0.0000824	219.90	0.018	0.0001
FS23	LPC.Fl_O	25.40	6.415	543.68	-0.65	0.0000	59.57	6.136	536.81	412.6	0.2529	1.39986	0.0000824	25.39	0.002	0.0001
FS24	VaporIN.Fl_O	25.40	6.415	543.81	-1.06	0.0000	59.58	6.135	536.94	412.6	0.2530	1.39984	0.0001589	25.39	0.004	0.0002
FS25	Bleed2.Fl_O	22.86	6.415	543.81	-1.06	0.0000	53.62	6.191	538.32	412.6	0.2260	1.39984	0.0001589	22.86	0.004	0.0002
FS3	HPC.Fl_O	21.75	38.786	984.01	106.03	0.0000	11.35	34.154	949.97	49.7	0.4325	1.38169	0.0001589	21.75	0.003	0.0002
FS36	Bleed3.Fl_O	16.86	38.786	984.01	106.03	0.0000	8.80	36.127	964.87	49.3	0.3221	1.38169	0.0001589	16.85	0.003	0.0002
FS4	Burner.Fl_O	17.04	37.893	1731.93	93.33	0.0111	12.08	35.783	1707.39	74.6	0.2944	1.33079	0.0001589	16.85	0.003	0.0137
FS45	HPT.Fl_O	22.78	9.210	1145.77	-10.32	0.0083	54.02	8.366	1116.60	265.4	0.3775	1.36569	0.0001589	22.59	0.004	0.0103
FS49	LPT.Fl_O	23.05	3.311	907.95	-68.55	0.0082	135.33	3.138	894.61	860.2	0.2797	1.38072	0.0001589	22.86	0.004	0.0102
FS5	TEGV.Fl_O	23.05	3.311	908.02	-68.55	0.0082	135.33	3.138	894.68	860.2	0.2797	1.38071	0.0001589	22.86	0.004	0.0102
FS8	Core_Nozz.Fl_O	23.05	3.311	908.09	-68.55	0.0082	135.34	2.947	879.32	613.4	0.4141	1.38071	0.0001589	22.86	0.004	0.0102
FS17	FanDuctLkg.Fl_O	219.92	4.711	488.91	-13.79	0.0000	666.03	3.976	465.75	2606.7	0.4982	1.40058	0.0000824	219.90	0.018	0.0001
FS171	Bleed15.Fl_O	222.46	4.711	489.54	-13.65	0.0000	674.16	3.851	462.10	2481.9	0.5444	1.40057	0.0000833	222.44	0.019	0.0001
FS172	FanDuct.Fl_O	222.46	4.711	489.54	-13.65	0.0000	674.16	3.851	462.10	2481.9	0.5444	1.40057	0.0000833	222.44	0.019	0.0001
FS173	Byp_Nozz.Fl_O	222.46	4.711	489.54	-13.65	0.0000	674.16	2.947	428.03	2006.9	0.8467	1.40057	0.0000833	222.44	0.019	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	733.80	1.122	0.9047	2504.280	1.0370	0.9062	-1300.4	2190.73	54.69
LPC	84.74	1.528	0.8409	2504.280	1.1531	0.8501	-622.2	6.78	3.35
HPC	53.62	6.046	0.8178	8945.742	1.8095	0.8565	-3379.7	61.28	57.90
HPT	12.08	4.114	0.8759	220.105	1.3615	0.8539	3379.7		
LPT	54.02	2.781	0.8500	70.537	1.2600	0.8307	1922.6		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	852.60	1.119	0.9065	2480.402	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	71.14	1.493	0.7769	0.661	0.0000	1.1912	1.0692	1.0824	0.0003
HPC	48.77	5.809	0.8263	8707.255	10.9862	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.028	0.8759	1.323	4.0281	12.6299	0.9723	1.0000	0.0003
LPT	0.83	2.340	0.8563	0.793	2.3398	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2560.61	5633.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2797	860.21
FanDuct	0.0000	0.5444	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.6594	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9160.0	1937.9	3379.7
LP_Shaft	2387.6	4229.1	1922.6

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8412	765.78	52.49	9.210
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2674	765.78	52.49	3.311
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	743.72	47.13	13.536
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	879.85	80.33	26.485
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	743.72	47.13	13.536
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	984.01	106.03	38.786
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	743.72	47.13	13.536

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5399	543.81	-1.06	6.415
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6100	984.01	106.03	37.893
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.2838	984.01	106.03	21.486
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	984.01	106.03	38.786
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	984.01	106.03	38.786
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	984.01	106.03	38.786
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	488.91	-13.79	4.711
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	488.91	-13.79	4.711
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	488.91	-13.79	4.711
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	488.91	-13.79	4.711

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1731.87	0.9995	0.0230	0.18717	0.01111

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.124	0.9801	1.0000	0.9800	613.40	0.414	586.2	419.9
Byp_Nozz	1.599	0.9800	1.0000	0.9800	2006.86	0.847	841.9	5820.9

```
**********************************************************************************************************************************
Date:07/05/13    Time:09:37:54    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 474.82    Stator 1 exit: 481.90    Stator 2 inlet: 490.80    Stator 2 exit: 495.33
            Stator 3 inlet: 504.51    Stator 3 exit: 508.61    Stator 4 inlet: 517.19    Stator 4 exit: 520.67
            Stator 5 inlet: 527.71    Stator 5 exit: 530.72            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.63
Fan Bypass Relative Humidity       1.95
LPC Inlet Relative Humidity        1.76
LPC Exit Relative Humidity         0.19
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          722.68    Fan/LPC Inlet Flow Velocity        183.18
Ambient Static Pressure          3.09    Fan/LPC Inlet Static Pressure        4.25
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   466.71
Additional Water at LPC Exit   0.0000701
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.714	37357.0	36.00	251.85	620.3	1.1040	684.84	8.7056	722.68	9.103	0.772	10.000	1721.1	1627.2	1135.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	251.85	4.339	469.50	-18.42	0.0000	811.53	3.088	425.97	2564.5	0.7140	1.40075	0.0000786	251.83	0.020	0.0001
FS1	Inlet.Fl_O	251.85	4.339	469.50	-18.42	0.0000	811.53	3.980	458.03	4168.2	0.3535	1.40075	0.0000786	251.83	0.020	0.0001
FS12	Splitter.Fl_02	225.90	4.337	469.50	-18.42	0.0000	728.28	3.929	456.40	3531.8	0.3784	1.40075	0.0000786	225.89	0.018	0.0001
FS2	Splitter.Fl_01	25.95	4.337	469.50	-18.42	0.0000	83.66	4.247	466.71	830.5	0.1729	1.40075	0.0000786	25.95	0.002	0.0001
FS14	Fan.Fl_O	225.90	4.852	486.45	-14.36	0.0000	662.59	4.105	463.71	2606.7	0.4947	1.40060	0.0000786	225.89	0.018	0.0001
FS23	LPC.Fl_O	25.95	6.568	539.84	-1.55	0.0000	59.24	6.285	533.10	412.6	0.2514	1.39992	0.0000786	25.95	0.002	0.0001
FS24	VaporIN.Fl_O	25.95	6.568	539.97	-1.93	0.0000	59.25	6.285	533.23	412.6	0.2515	1.39991	0.0001487	25.95	0.004	0.0001
FS25	Bleed2.Fl_O	23.36	6.568	539.97	-1.93	0.0000	53.32	6.341	534.58	412.6	0.2246	1.39991	0.0001487	23.35	0.003	0.0001
FS3	HPC.Fl_O	22.22	39.498	975.91	104.09	0.0000	11.34	34.791	942.20	49.7	0.4320	1.38217	0.0001487	22.22	0.003	0.0001
FS36	Bleed3.Fl_O	17.22	39.498	975.91	104.09	0.0000	8.79	36.795	956.95	49.3	0.3217	1.38217	0.0001487	17.22	0.003	0.0001
FS4	Burner.Fl_O	17.41	38.589	1721.05	91.46	0.0110	12.08	36.439	1696.64	74.6	0.2943	1.33134	0.0001487	17.22	0.003	0.0136
FS45	HPT.Fl_O	23.27	9.422	1139.20	-11.12	0.0082	53.79	8.567	1110.45	265.4	0.3755	1.36614	0.0001487	23.08	0.003	0.0102
FS49	LPT.Fl_O	23.55	3.451	906.86	-67.95	0.0081	132.59	3.278	894.11	860.2	0.2735	1.38081	0.0001487	23.35	0.003	0.0101
FS5	TEGV.Fl_O	23.55	3.451	906.93	-67.95	0.0081	132.60	3.278	894.18	860.2	0.2735	1.38081	0.0001487	23.35	0.003	0.0101
FS8	Core_Nozz.Fl_O	23.55	3.451	907.00	-67.95	0.0081	132.60	3.088	879.63	613.4	0.4037	1.38080	0.0001487	23.35	0.003	0.0101
FS17	FanDuctLkg.Fl_O	225.90	4.852	486.45	-14.36	0.0000	662.59	4.105	463.71	2606.7	0.4947	1.40060	0.0000786	225.89	0.018	0.0001
FS171	Bleed15.Fl_O	228.50	4.852	487.06	-14.22	0.0000	670.62	3.978	460.16	2481.9	0.5401	1.40060	0.0000794	228.48	0.018	0.0001
FS172	FanDuct.Fl_O	228.50	4.852	487.06	-14.22	0.0000	670.62	3.978	460.16	2481.9	0.5401	1.40060	0.0000794	228.48	0.018	0.0001
FS173	Byp_Nozz.Fl_O	228.50	4.852	487.06	-14.22	0.0000	670.62	3.088	427.99	2006.9	0.8297	1.40060	0.0000794	228.48	0.018	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	728.28	1.119	0.9043	2477.503	1.0361	0.9058	-1298.0	2584.42	54.62
LPC	83.66	1.514	0.8408	2477.503	1.1498	0.8498	-619.3	6.69	3.27
HPC	53.32	6.014	0.8173	8935.972	1.8073	0.8561	-3418.2	61.37	57.96
HPT	12.08	4.095	0.8753	219.778	1.3603	0.8533	3418.2		
LPT	53.79	2.730	0.8478	69.837	1.2542	0.8287	1917.3		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	846.19	1.116	0.9061	2453.880	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	69.98	1.481	0.7756	0.654	0.0000	1.1954	1.0682	1.0840	0.0003
HPC	48.50	5.778	0.8258	8697.745	10.9845	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.010	0.8753	1.321	4.0096	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.302	0.8541	0.786	2.3015	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2564.46	5657.0

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2735	860.21
FanDuct	0.0000	0.5401	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7056	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9117.6	1969.0	3418.2
LP_Shaft	2357.2	4272.0	1917.3

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8595	759.75	51.08	9.422
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2733	759.75	51.08	3.451
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	737.90	45.78	13.812
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	872.73	78.64	26.985
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	737.90	45.78	13.812
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	975.91	104.09	39.498
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	737.90	45.78	13.812

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5951	539.97	-1.93	6.568
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6668	975.91	104.09	38.589
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3335	975.91	104.09	21.906
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	975.91	104.09	39.498
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	975.91	104.09	39.498
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	975.91	104.09	39.498
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	486.45	-14.36	4.852
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	486.45	-14.36	4.852
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	486.45	-14.36	4.852
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	486.45	-14.36	4.852

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1721.00	0.9995	0.0230	0.19023	0.01105

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.117	0.9801	1.0000	0.9800	613.40	0.404	571.6	418.3
Byp_Nozz	1.571	0.9800	1.0000	0.9800	2006.86	0.830	825.0	5859.0

```
**********************************************************************************************************************************
Date:07/05/13    Time:09:38:09    Model:                                        Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 10/ 24/ 1/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 476.22    Stator 1 exit: 482.86    Stator 2 inlet: 491.16    Stator 2 exit: 495.38
            Stator 3 inlet: 503.94    Stator 3 exit: 507.74    Stator 4 inlet: 515.75    Stator 4 exit: 518.95
            Stator 5 inlet: 525.50    Stator 5 exit: 528.27            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.24
Fan Bypass Relative Humidity       2.48
LPC Inlet Relative Humidity        2.22
LPC Exit Relative Humidity         0.28
HPC Relative Humidity              0.00
Drop Diameter                 0.0000500    Inlet Length                         40.00
Ambient Flow Velocity           682.24    Fan/LPC Inlet Flow Velocity         176.63
Ambient Static Pressure           3.58    Fan/LPC Inlet Static Pressure         4.74
Ambient Static Temperature      432.42    Fan/LPC Inlet Static Temperature    468.61
Additional Water at LPC Exit    0.0000690

                                    SUMMARY OUTPUT DATA
    MN       alt     dTamb         W         Fn       TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet       T4      T41      T49
 0.669   34281.0     36.00    272.66      667.0     1.0952     730.45    8.8130    682.24     8.726     0.795       10.000      1710.4   1616.8   1130.2


                                    FLOW STATION DATA
                                 W        Pt        Tt        ht       FAR        Wc        Ps        Ts      Aphy      MN      gamt        WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O          272.66     4.831    471.21    -18.12    0.0000    790.57     3.578    432.42    2577.0  0.6690   1.40074  0.0000968    272.63    0.026    0.0001
FS1   Inlet.Fl_O            272.66     4.831    471.21    -18.12    0.0000    790.57     4.453    460.37    4168.2  0.3429   1.40074  0.0000968    272.63    0.026    0.0001
FS12  Splitter.Fl_02        244.87     4.829    471.21    -18.12    0.0000    710.36     4.399    458.81    3531.8  0.3674   1.40074  0.0000968    244.85    0.024    0.0001
FS2   Splitter.Fl_01         27.78     4.829    471.21    -18.12    0.0000     80.60     4.736    468.61     830.5  0.1664   1.40074  0.0000968     27.78    0.003    0.0001
FS14  Fan.Fl_O              244.87     5.360    487.02    -14.33    0.0000    650.62     4.570    465.32    2606.7  0.4824   1.40059  0.0000968    244.85    0.024    0.0001
FS23  LPC.Fl_O               27.78     7.120    536.98     -2.35    0.0000     58.35     6.823    530.49     412.6  0.2474   1.39996  0.0000968     27.78    0.003    0.0001
FS24  VaporIN.Fl_O           27.79     7.120    537.10     -2.71    0.0000     58.36     6.823    530.61     412.6  0.2474   1.39995  0.0001658     27.78    0.005    0.0002
FS25  Bleed2.Fl_O            25.01     7.120    537.10     -2.71    0.0000     52.53     6.882    531.91     412.6  0.2210   1.39995  0.0001658     25.00    0.004    0.0002
FS3   HPC.Fl_O               23.80    42.157    966.99    101.78    0.0000     11.33    37.149    933.67      49.7  0.4312   1.38270  0.0001658     23.79    0.004    0.0002
FS36  Bleed3.Fl_O            18.44    42.157    966.99    101.78    0.0000      8.78    39.280    948.24      49.3  0.3212   1.38270  0.0001658     18.44    0.003    0.0002
FS4   Burner.Fl_O            18.64    41.186   1710.41     89.23    0.0110     12.08    38.892   1686.13      74.6  0.2943   1.33186  0.0001658     18.44    0.003    0.0136
FS45  HPT.Fl_O               24.92    10.173   1134.37    -11.86    0.0082     53.24     9.270   1106.40     265.4  0.3708   1.36647  0.0001658     24.71    0.004    0.0102
FS49  LPT.Fl_O               25.21     3.939    915.40    -65.33    0.0081    124.94     3.766    904.09     860.2  0.2564   1.38033  0.0001658     25.00    0.004    0.0101
FS5   TEGV.Fl_O              25.21     3.939    915.48    -65.33    0.0081    124.95     3.766    904.16     860.2  0.2564   1.38032  0.0001658     25.00    0.004    0.0101
FS8   Core_Nozz.Fl_O         25.21     3.939    915.55    -65.33    0.0081    124.95     3.578    891.56     613.4  0.3757   1.38032  0.0001658     25.00    0.004    0.0101
FS17  FanDuctLkg.Fl_O       244.87     5.360    487.02    -14.33    0.0000    650.62     4.570    465.32    2606.7  0.4824   1.40059  0.0000968    244.85    0.024    0.0001
FS171 Bleed15.Fl_O          247.65     5.360    487.58    -14.20    0.0000    658.38     4.440    462.01    2481.9  0.5256   1.40059  0.0000976    247.62    0.024    0.0001
FS172 FanDuct.Fl_O          247.65     5.360    487.58    -14.20    0.0000    658.38     4.440    462.01    2481.9  0.5256   1.40059  0.0000976    247.62    0.024    0.0001
FS173 Byp_Nozz.Fl_O         247.65     5.360    487.58    -14.20    0.0000    658.38     3.578    434.35    2006.9  0.7820   1.40059  0.0000976    247.62    0.024    0.0001

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff        Nc        TR    efPoly       pwr       SMN      SMW
Fan       710.36   1.110    0.9031  2395.161    1.0335    0.9046   -1312.8   5841.49    54.21
LPC        80.60   1.475    0.8415  2395.161    1.1396    0.8499    -620.0      6.40     3.05
HPC        52.53   5.921    0.8158  8909.698    1.8004    0.8545   -3607.5     61.79    58.29
HPT        12.08   4.049    0.8746   219.228    1.3570    0.8526    3607.5
LPT        53.24   2.582    0.8427    67.783    1.2370    0.8241    1932.8

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan        825.37   1.107   0.9050   2372.323    0.0413      0.8607    1.0235    0.9980    0.9905
LPC         66.41   1.445   0.7718      0.633    0.0000      1.2135    1.0672    1.0903    0.0003
HPC         47.77   5.689   0.8242   8672.172   10.9686      1.0995    1.0494    0.9898    0.9733
HPT          0.96   3.964   0.8746      1.318    3.9641     12.6299    0.9723    1.0000    0.0003
LPT          0.82   2.190   0.8489      0.762    2.1901     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2576.97	5781.5
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2564	860.21
FanDuct	0.0000	0.5256	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8130	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9066.7	2089.7	3607.5
LP_Shaft	2283.0	4446.5	1932.8

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9203	753.78	49.53	10.173
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2926	753.78	49.53	3.939
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.23	44.31	14.828
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	865.20	76.70	28.843
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.23	44.31	14.828
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	966.99	101.78	42.157
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.23	44.31	14.828

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.7787	537.10	-2.71	7.120
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.8554	966.99	101.78	41.186
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.4986	966.99	101.78	23.446
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	966.99	101.78	42.157
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	966.99	101.78	42.157
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	966.99	101.78	42.157
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	487.02	-14.33	5.360
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	487.02	-14.33	5.360
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	487.02	-14.33	5.360
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	487.02	-14.33	5.360

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1710.35	0.9995	0.0230	0.20290	0.01100

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.101	0.9801	1.0000	0.9800	613.40	0.376	535.4	419.6
Byp_Nozz	1.498	0.9800	1.0000	0.9800	2006.86	0.782	783.3	6028.9

```
**********************************************************************************************************************************
Date:07/05/13    Time:09:38:26    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 14/ 28/ 1/12    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 484.51    Stator 1 exit: 490.20    Stator 2 inlet: 497.24    Stator 2 exit: 500.64
            Stator 3 inlet: 507.99    Stator 3 exit: 510.98    Stator 4 inlet: 517.90    Stator 4 exit: 520.36
            Stator 5 inlet: 525.93    Stator 5 exit: 528.02            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.18
Fan Bypass Relative Humidity       3.37
LPC Inlet Relative Humidity        3.05
LPC Exit Relative Humidity         0.57
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          630.80    Fan/LPC Inlet Flow Velocity        177.35
Ambient Static Pressure          4.36    Fan/LPC Inlet Static Pressure        5.49
Ambient Static Temperature     447.58    Fan/LPC Inlet Static Temperature   478.12
Additional Water at LPC Exit   0.0000791
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.608	30029.0	36.00	298.11	710.0	1.1111	788.84	8.4114	630.80	8.108	0.827	10.000	1708.3	1614.4	1131.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	298.11	5.595	480.74	-16.28	0.0000	753.84	4.358	447.58	2589.6	0.6080	1.40064	0.0001750	298.06	0.052	0.0002
FS1	Inlet.Fl_O	298.11	5.595	480.74	-16.28	0.0000	753.84	5.201	470.80	4168.2	0.3247	1.40064	0.0001750	298.06	0.052	0.0002
FS12	Splitter.Fl_02	266.44	5.592	480.74	-16.28	0.0000	674.08	5.149	469.51	3531.8	0.3454	1.40064	0.0001750	266.39	0.047	0.0002
FS2	Splitter.Fl_01	31.68	5.592	480.74	-16.28	0.0000	80.14	5.486	478.12	830.5	0.1654	1.40064	0.0001750	31.67	0.006	0.0002
FS14	Fan.Fl_O	266.44	6.130	494.94	-12.88	0.0000	623.92	5.315	475.14	2606.7	0.4561	1.40050	0.0001750	266.39	0.047	0.0002
FS23	LPC.Fl_O	31.68	7.803	536.93	-2.81	0.0000	60.70	7.450	529.86	412.6	0.2581	1.39995	0.0001750	31.67	0.006	0.0002
FS24	VaporIN.Fl_O	31.68	7.803	537.07	-3.23	0.0000	60.71	7.450	530.00	412.6	0.2582	1.39994	0.0002541	31.67	0.008	0.0003
FS25	Bleed2.Fl_O	26.93	7.803	537.07	-3.23	0.0000	51.60	7.551	532.06	412.6	0.2169	1.39994	0.0002541	26.92	0.007	0.0003
FS3	HPC.Fl_O	25.62	45.365	962.40	100.14	0.0000	11.31	39.999	929.37	49.7	0.4301	1.38296	0.0002541	25.61	0.007	0.0003
FS36	Bleed3.Fl_O	19.86	45.365	962.40	100.14	0.0000	8.76	42.282	943.80	49.3	0.3205	1.38296	0.0002541	19.85	0.005	0.0003
FS4	Burner.Fl_O	20.08	44.320	1708.34	87.57	0.0110	12.08	41.851	1684.08	74.6	0.2943	1.33192	0.0002541	19.85	0.005	0.0137
FS45	HPT.Fl_O	26.83	11.108	1136.01	-12.40	0.0082	52.53	10.152	1108.86	265.4	0.3650	1.36634	0.0002541	26.60	0.007	0.0103
FS49	LPT.Fl_O	27.15	4.710	937.33	-60.83	0.0081	113.86	4.539	927.84	860.2	0.2322	1.37899	0.0002541	26.92	0.007	0.0102
FS5	TEGV.Fl_O	27.15	4.710	937.40	-60.83	0.0081	113.86	4.539	927.91	860.2	0.2322	1.37899	0.0002541	26.92	0.007	0.0102
FS8	Core_Nozz.Fl_O	27.15	4.710	937.48	-60.83	0.0081	113.87	4.358	917.67	613.4	0.3372	1.37898	0.0002541	26.92	0.007	0.0102
FS17	FanDuctLkg.Fl_O	266.44	6.130	494.94	-12.88	0.0000	623.92	5.315	475.14	2606.7	0.4561	1.40050	0.0001750	266.39	0.047	0.0002
FS171	Bleed15.Fl_O	271.19	6.130	495.68	-12.71	0.0000	635.52	5.168	472.06	2481.9	0.4998	1.40049	0.0001764	271.14	0.048	0.0002
FS172	FanDuct.Fl_O	271.19	6.130	495.68	-12.71	0.0000	635.52	5.168	472.06	2481.9	0.4998	1.40049	0.0001764	271.14	0.048	0.0002
FS173	Byp_Nozz.Fl_O	271.19	6.130	495.68	-12.71	0.0000	635.52	4.358	449.59	2006.9	0.7153	1.40049	0.0001764	271.14	0.048	0.0002

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	674.08	1.096	0.9014	2239.031	1.0295	0.9027	-1283.3	-8377.61	52.80
LPC	80.14	1.395	0.8549	2239.031	1.1169	0.8616	-604.0	5.98	2.60
HPC	51.60	5.814	0.8138	8879.365	1.7920	0.8527	-3842.6	62.28	58.66
HPT	12.08	3.990	0.8743	218.606	1.3525	0.8525	3842.6		
LPT	52.53	2.358	0.8337	63.955	1.2095	0.8162	1887.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	783.22	1.094	0.9032	2217.682	0.0416	0.8607	1.0235	0.9980	0.9905
LPC	59.98	1.378	0.7652	0.591	0.0000	1.3363	1.0451	1.1172	0.0003
HPC	46.93	5.587	0.8222	8642.647	10.9508	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.907	0.8743	1.314	3.9070	12.6299	0.9723	1.0000	0.0003
LPT	0.80	2.022	0.8399	0.719	2.0217	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2589.57	5844.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2322	860.21
FanDuct	0.0000	0.4998	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.4114	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9035.5	2233.6	3842.6
LP_Shaft	2155.6	4598.2	1887.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9909	751.42	48.45	11.108
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3150	751.42	48.45	4.710
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	730.10	43.29	16.067
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	861.67	75.33	31.091
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	730.10	43.29	16.067
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	962.40	100.14	45.365
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	730.10	43.29	16.067

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1500	1.0000	1.0000	4.7517	537.07	-3.23	7.803
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.0745	962.40	100.14	44.320
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.6902	962.40	100.14	25.323
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	962.40	100.14	45.365
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	962.40	100.14	45.365
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	962.40	100.14	45.365
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	494.94	-12.88	6.130
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	494.94	-12.88	6.130
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	494.94	-12.88	6.130
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	494.94	-12.88	6.130

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1708.28	0.9995	0.0230	0.21912	0.01104

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.081	0.9801	1.0000	0.9800	613.40	0.337	487.2	411.1
Byp_Nozz	1.407	0.9800	1.0000	0.9800	2006.86	0.715	728.9	6143.6

```
**********************************************************************************************************************************
Date:07/05/13    Time:09:38:56    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 22/ 50/ 2/19    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 492.28    Stator 1 exit: 496.44    Stator 2 inlet: 501.17    Stator 2 exit: 503.03
            Stator 3 inlet: 508.28    Stator 3 exit: 509.72    Stator 4 inlet: 514.76    Stator 4 exit: 515.79
            Stator 5 inlet: 519.47    Stator 5 exit: 520.22            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.02
Fan Bypass Relative Humidity       4.21
LPC Inlet Relative Humidity        4.03
LPC Exit Relative Humidity         1.37
HPC Relative Humidity              0.00
Drop Diameter                0.0000500    Inlet Length                        40.00
Ambient Flow Velocity          582.56    Fan/LPC Inlet Flow Velocity        195.58
Ambient Static Pressure          5.30    Fan/LPC Inlet Static Pressure        6.37
Ambient Static Temperature     463.14    Fan/LPC Inlet Static Temperature   488.23
Additional Water at LPC Exit   0.0000812
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.552	25666.0	36.00	322.28	710.2	1.1729	833.00	7.1195	582.56	7.194	0.857	10.000	1713.1	1617.1	1139.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	322.28	6.516	491.41	-14.47	0.0000	707.48	5.297	463.14	2581.1	0.5520	1.40052	0.0003043	322.18	0.098	0.0003
FS1	Inlet.Fl_O	322.28	6.516	491.41	-14.47	0.0000	707.48	6.116	482.59	4168.2	0.3022	1.40052	0.0003043	322.18	0.098	0.0003
FS12	Splitter.Fl_02	282.59	6.513	491.41	-14.47	0.0000	620.66	6.082	481.88	3531.8	0.3143	1.40052	0.0003043	282.50	0.086	0.0003
FS2	Splitter.Fl_01	39.69	6.513	491.41	-14.47	0.0000	87.18	6.366	488.23	830.5	0.1805	1.40052	0.0003043	39.68	0.012	0.0003
FS14	Fan.Fl_O	282.59	7.039	503.65	-11.54	0.0000	581.39	6.246	486.73	2606.7	0.4167	1.40039	0.0003043	282.50	0.086	0.0003
FS23	LPC.Fl_O	39.69	8.181	531.61	-4.83	0.0000	72.19	7.644	521.41	412.6	0.3127	1.40001	0.0003043	39.68	0.012	0.0003
FS24	VaporIN.Fl_O	39.69	8.181	531.75	-5.27	0.0000	72.20	7.644	521.54	412.6	0.3128	1.40000	0.0003856	39.68	0.015	0.0004
FS25	Bleed2.Fl_O	27.79	8.181	531.75	-5.27	0.0000	50.54	7.928	527.00	412.6	0.2122	1.40000	0.0003856	27.78	0.011	0.0004
FS3	HPC.Fl_O	26.44	46.878	949.69	96.25	0.0000	11.22	41.436	917.69	49.7	0.4257	1.38370	0.0003856	26.43	0.010	0.0004
FS36	Bleed3.Fl_O	20.49	46.878	949.69	96.25	0.0000	8.69	43.746	931.64	49.3	0.3175	1.38370	0.0003856	20.48	0.008	0.0004
FS4	Burner.Fl_O	20.72	45.799	1713.12	83.43	0.0113	12.08	43.246	1688.80	74.6	0.2945	1.33150	0.0003856	20.48	0.008	0.0141
FS45	HPT.Fl_O	27.69	11.866	1144.33	-14.60	0.0084	50.94	10.912	1118.88	265.4	0.3522	1.36565	0.0003856	27.45	0.011	0.0107
FS49	LPT.Fl_O	28.02	5.615	969.24	-57.16	0.0083	100.24	5.459	961.76	860.2	0.2031	1.37691	0.0003856	27.78	0.011	0.0106
FS5	TEGV.Fl_O	28.02	5.615	969.31	-57.16	0.0083	100.24	5.459	961.83	860.2	0.2031	1.37691	0.0003856	27.78	0.011	0.0106
FS8	Core_Nozz.Fl_O	28.02	5.615	969.38	-57.16	0.0083	100.25	5.297	954.01	613.4	0.2922	1.37690	0.0003856	27.78	0.011	0.0106
FS17	FanDuctLkg.Fl_O	282.59	7.039	503.65	-11.54	0.0000	581.39	6.246	486.73	2606.7	0.4167	1.40039	0.0003043	282.50	0.086	0.0003
FS171	Bleed15.Fl_O	294.49	7.039	504.79	-11.28	0.0000	606.58	6.054	483.49	2481.9	0.4690	1.40037	0.0003076	294.40	0.091	0.0003
FS172	FanDuct.Fl_O	294.49	7.039	504.79	-11.28	0.0000	606.58	6.054	483.49	2481.9	0.4690	1.40037	0.0003076	294.40	0.091	0.0003
FS173	Byp_Nozz.Fl_O	294.49	7.039	504.79	-11.28	0.0000	606.58	5.297	465.37	2006.9	0.6503	1.40037	0.0003076	294.40	0.091	0.0003

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	620.66	1.081	0.9017	2025.533	1.0249	0.9028	-1173.3	-2597.69	50.01
LPC	87.18	1.256	0.8234	2025.533	1.0818	0.8290	-541.4	6.43	2.41
HPC	50.54	5.730	0.8121	8845.497	1.7860	0.8511	-3894.1	61.74	58.02
HPT	12.08	3.860	0.8752	216.389	1.3429	0.8541	3894.1		
LPT	50.94	2.113	0.8233	58.283	1.1777	0.8075	1714.7		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	721.15	1.079	0.9035	2006.219	0.0424	0.8607	1.0235	0.9980	0.9905
LPC	52.83	1.305	0.7603	0.535	0.0000	1.6500	0.8409	1.0830	0.0003
HPC	45.97	5.507	0.8205	8609.682	10.9982	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.780	0.8752	1.300	3.7804	12.6299	0.9723	1.0000	0.0003
LPT	0.78	1.837	0.8294	0.656	1.8373	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2581.06	5835.3

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2031	860.21
FanDuct	0.0000	0.4690	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.1195	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8956.3	2283.5	3894.1
LP_Shaft	1971.6	4567.9	1714.7

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0225	742.30	45.49	11.866
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3251	742.30	45.49	5.615
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	721.36	40.42	16.694
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	850.66	71.88	32.173
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	721.36	40.42	16.694
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	949.69	96.25	46.878
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	721.36	40.42	16.694

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.3000	1.0000	1.0000	11.9085	531.75	-5.27	8.181
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.1727	949.69	96.25	45.799
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.7761	949.69	96.25	26.389
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	949.69	96.25	46.878
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	949.69	96.25	46.878
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	949.69	96.25	46.878
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	503.65	-11.54	7.039
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	503.65	-11.54	7.039
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	503.65	-11.54	7.039
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	503.65	-11.54	7.039

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1713.06	0.9995	0.0230	0.23139	0.01130

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.060	0.9801	1.0000	0.9800	613.40	0.292	430.2	374.6
Byp_Nozz	1.329	0.9800	1.0000	0.9800	2006.86	0.650	674.2	6170.9

```
**********************************************************************************************************************************
Date:07/05/13    Time:09:39:25    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 22/ 50/ 2/19    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 505.22    Stator 1 exit: 508.18    Stator 2 inlet: 510.96    Stator 2 exit: 511.76
            Stator 3 inlet: 515.11    Stator 3 exit: 515.48    Stator 4 inlet: 518.75    Stator 4 exit: 518.81
            Stator 5 inlet: 520.69    Stator 5 exit: 520.56            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         6.01
Fan Bypass Relative Humidity       5.19
LPC Inlet Relative Humidity        5.20
LPC Exit Relative Humidity         2.84
HPC Relative Humidity              0.01
Drop Diameter                 0.0000500    Inlet Length                        40.00
Ambient Flow Velocity           528.20    Fan/LPC Inlet Flow Velocity        203.15
Ambient Static Pressure           6.74    Fan/LPC Inlet Static Pressure        7.75
Ambient Static Temperature      483.18    Fan/LPC Inlet Static Temperature   502.97
Additional Water at LPC Exit    0.0000933
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.490	20047.0	36.00	357.70	762.5	1.1969	912.63	6.3414	528.20	6.254	0.888	10.000	1736.7	1637.2	1166.0

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	357.70	7.943	506.41	-12.46	0.0000	653.92	6.740	483.18	2590.9	0.4900	1.40031	0.0005787	357.49	0.207	0.0006
FS1	Inlet.Fl_O	357.70	7.943	506.41	-12.46	0.0000	653.92	7.531	498.75	4168.2	0.2770	1.40031	0.0005787	357.49	0.207	0.0006
FS12	Splitter.Fl_02	308.97	7.939	506.41	-12.46	0.0000	565.13	7.509	498.41	3531.8	0.2831	1.40031	0.0005787	308.79	0.179	0.0006
FS2	Splitter.Fl_01	48.72	7.939	506.41	-12.46	0.0000	89.12	7.752	502.97	830.5	0.1847	1.40031	0.0005787	48.70	0.028	0.0006
FS14	Fan.Fl_O	308.97	8.480	517.06	-9.90	0.0000	534.65	7.690	502.82	2606.7	0.3761	1.40018	0.0005787	308.79	0.179	0.0006
FS23	LPC.Fl_O	48.72	9.054	534.27	-5.77	0.0000	80.27	8.305	521.26	412.6	0.3533	1.39993	0.0005787	48.70	0.028	0.0006
FS24	VaporIN.Fl_O	48.73	9.054	534.43	-6.27	0.0000	80.29	8.305	521.40	412.6	0.3534	1.39992	0.0006720	48.70	0.033	0.0007
FS25	Bleed2.Fl_O	29.24	9.054	534.43	-6.27	0.0000	48.17	8.800	530.11	412.6	0.2018	1.39992	0.0006720	29.22	0.020	0.0007
FS3	HPC.Fl_O	27.82	49.678	943.60	93.12	0.0000	11.10	44.047	912.57	49.7	0.4202	1.38401	0.0006720	27.80	0.019	0.0007
FS36	Bleed3.Fl_O	21.56	49.678	943.60	93.12	0.0000	8.60	46.433	926.06	49.3	0.3138	1.38401	0.0006720	21.55	0.014	0.0007
FS4	Burner.Fl_O	21.81	48.534	1736.73	79.81	0.0118	12.09	45.827	1712.12	74.6	0.2947	1.33004	0.0006720	21.55	0.014	0.0150
FS45	HPT.Fl_O	29.15	13.282	1170.70	-15.95	0.0088	48.45	12.324	1147.54	265.4	0.3327	1.36368	0.0006720	28.88	0.019	0.0114
FS49	LPT.Fl_O	29.49	7.031	1017.56	-53.08	0.0087	86.34	6.886	1011.84	860.2	0.1740	1.37361	0.0006720	29.22	0.020	0.0113
FS5	TEGV.Fl_O	29.49	7.031	1017.63	-53.08	0.0087	86.34	6.886	1011.91	860.2	0.1740	1.37361	0.0006720	29.22	0.020	0.0113
FS8	Core_Nozz.Fl_O	29.49	7.031	1017.70	-53.08	0.0087	86.35	6.740	1006.09	613.5	0.2485	1.37360	0.0006720	29.22	0.020	0.0113
FS17	FanDuctLkg.Fl_O	308.97	8.480	517.06	-9.90	0.0000	534.65	7.690	502.82	2606.7	0.3761	1.40018	0.0005787	308.79	0.179	0.0006
FS171	Bleed15.Fl_O	328.46	8.480	518.09	-9.69	0.0000	568.94	7.461	499.48	2481.9	0.4314	1.40016	0.0005842	328.27	0.192	0.0006
FS172	FanDuct.Fl_O	328.46	8.480	518.09	-9.69	0.0000	568.94	7.461	499.48	2481.9	0.4314	1.40016	0.0005842	328.27	0.192	0.0006
FS173	Byp_Nozz.Fl_O	328.46	8.480	518.09	-9.69	0.0000	568.94	6.740	485.18	2006.9	0.5821	1.40016	0.0005842	328.27	0.192	0.0006

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	565.13	1.068	0.9035	1815.414	1.0210	0.9044	-1117.3	-1833.24	46.56
LPC	89.12	1.140	0.6954	1815.414	1.0550	0.7011	-460.9	7.12	2.04
HPC	48.17	5.487	0.8076	8765.136	1.7656	0.8467	-4011.6	62.14	58.12
HPT	12.09	3.654	0.8765	213.497	1.3265	0.8566	4011.6		
LPT	48.45	1.889	0.8151	52.427	1.1472	0.8013	1578.1		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	656.63	1.067	0.9053	1798.104	0.0437	0.8607	1.0235	0.9980	0.9905
LPC	46.01	1.238	0.7547	0.479	0.0000	1.9367	0.5891	0.9214	0.0003
HPC	43.81	5.276	0.8160	8531.463	11.0079	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.581	0.8765	1.283	3.5807	12.6299	0.9723	1.0000	0.0003
LPT	0.74	1.669	0.8212	0.590	1.6687	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2590.88	5872.3
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1740	860.21
FanDuct	0.0000	0.4314	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.3414	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8897.3	2368.1	4011.6
LP_Shaft	1793.8	4620.6	1578.1

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0759	740.53	43.42	13.282
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3421	740.53	43.42	7.031
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	720.02	38.45	17.991
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	846.61	69.26	34.241
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	720.02	38.45	17.991
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	943.60	93.12	49.678
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	720.02	38.45	17.991

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	19.4912	534.43	-6.27	9.054
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.3383	943.60	93.12	48.534
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.9210	943.60	93.12	28.370
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	943.60	93.12	49.678
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	943.60	93.12	49.678
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	943.60	93.12	49.678
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	517.06	-9.90	8.480
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	517.06	-9.90	8.480
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	517.06	-9.90	8.480
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	517.06	-9.90	8.480

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1736.67	0.9995	0.0230	0.25351	0.01177

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.043	0.9801	1.0000	0.9800	613.40	0.249	375.3	344.0
Byp_Nozz	1.258	0.9800	1.0000	0.9800	2006.86	0.582	616.2	6290.8

100μm, ISA +18R

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**********************************************************************************************************************************
Date:07/05/13    Time:09:49:59    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 463.24    Stator 1 exit: 470.64    Stator 2 inlet: 479.94    Stator 2 exit: 484.70
            Stator 3 inlet: 494.31    Stator 3 exit: 498.63    Stator 4 inlet: 507.63    Stator 4 exit: 511.31
            Stator 5 inlet: 518.70    Stator 5 exit: 521.92            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.76
Fan Bypass Relative Humidity       1.24
LPC Inlet Relative Humidity        1.13
LPC Exit Relative Humidity         0.10
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          772.64    Fan/LPC Inlet Flow Velocity        187.93
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   454.80
Additional Water at LPC Exit   0.0000180
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	18.00	257.26	608.3	1.1343	689.97	8.5924	772.64	9.489	0.736	10.000	1693.2	1601.3	1112.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	257.26	4.267	457.74	-20.96	0.0000	832.40	2.854	407.97	2539.4	0.7800	1.40084	0.0000295	257.25	0.008	0.0000
FS1	Inlet.Fl_O	257.26	4.267	457.74	-20.96	0.0000	832.40	3.893	445.88	4168.2	0.3642	1.40084	0.0000295	257.25	0.008	0.0000
FS12	Splitter.Fl_02	230.44	4.265	457.74	-20.96	0.0000	746.00	3.841	444.23	3531.8	0.3896	1.40084	0.0000295	230.44	0.007	0.0000
FS2	Splitter.Fl_01	26.82	4.265	457.74	-20.96	0.0000	86.82	4.170	454.80	830.5	0.1797	1.40084	0.0000295	26.82	0.001	0.0000
FS14	Fan.Fl_O	230.44	4.811	475.48	-16.70	0.0000	673.99	4.037	452.22	2606.7	0.5066	1.40071	0.0000295	230.44	0.007	0.0000
FS23	LPC.Fl_O	26.82	6.639	531.25	-3.33	0.0000	60.08	6.345	524.41	412.6	0.2553	1.40005	0.0000295	26.82	0.001	0.0000
FS24	VaporIN.Fl_O	26.82	6.639	531.30	-3.42	0.0000	60.08	6.345	524.47	412.6	0.2553	1.40005	0.0000475	26.82	0.001	0.0000
FS25	Bleed2.Fl_O	24.14	6.639	531.30	-3.42	0.0000	54.08	6.403	525.84	412.6	0.2280	1.40005	0.0000475	24.14	0.001	0.0000
FS3	HPC.Fl_O	22.97	40.487	964.20	101.76	0.0000	11.37	35.638	930.68	49.7	0.4331	1.38289	0.0000475	22.97	0.001	0.0000
FS36	Bleed3.Fl_O	17.80	40.487	964.20	101.76	0.0000	8.81	37.704	945.35	49.3	0.3224	1.38289	0.0000475	17.80	0.001	0.0000
FS4	Burner.Fl_O	17.99	39.555	1693.20	89.48	0.0108	12.08	37.353	1669.10	74.6	0.2941	1.33285	0.0000475	17.80	0.001	0.0132
FS45	HPT.Fl_O	24.05	9.489	1116.81	-12.39	0.0080	54.65	8.596	1087.47	265.4	0.3824	1.36775	0.0000475	23.85	0.001	0.0099
FS49	LPT.Fl_O	24.33	3.259	875.22	-71.37	0.0079	142.53	3.069	860.76	860.2	0.2960	1.38277	0.0000475	24.14	0.001	0.0098
FS5	TEGV.Fl_O	24.33	3.259	875.29	-71.37	0.0079	142.53	3.069	860.84	860.2	0.2960	1.38276	0.0000475	24.14	0.001	0.0098
FS8	Core_Nozz.Fl_O	24.33	3.259	875.36	-71.37	0.0079	142.54	2.854	843.76	613.4	0.4418	1.38276	0.0000475	24.14	0.001	0.0098
FS17	FanDuctLkg.Fl_O	230.44	4.811	475.48	-16.70	0.0000	673.99	4.037	452.22	2606.7	0.5066	1.40071	0.0000295	230.44	0.007	0.0000
FS171	Bleed15.Fl_O	233.12	4.811	476.13	-16.55	0.0000	682.30	3.904	448.50	2481.9	0.5544	1.40070	0.0000297	233.12	0.007	0.0000
FS172	FanDuct.Fl_O	233.12	4.811	476.13	-16.55	0.0000	682.30	3.904	448.50	2481.9	0.5544	1.40070	0.0000297	233.12	0.007	0.0000
FS173	Byp_Nozz.Fl_O	233.12	4.811	476.13	-16.55	0.0000	682.30	2.854	410.03	2006.9	0.8966	1.40070	0.0000297	233.12	0.007	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	746.00	1.128	0.9051	2560.797	1.0388	0.9067	-1386.3	1663.00	54.94
LPC	86.82	1.557	0.8403	2560.797	1.1606	0.8500	-668.7	6.95	3.67
HPC	54.08	6.098	0.8187	8960.611	1.8148	0.8574	-3505.0	61.08	57.75
HPT	12.08	4.168	0.8739	220.399	1.3661	0.8512	3505.0		
LPT	54.65	2.912	0.8506	71.986	1.2742	0.8304	2055.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	866.78	1.125	0.9070	2536.380	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	73.59	1.519	0.7795	0.676	0.0000	1.1798	1.0735	1.0779	0.0003
HPC	49.18	5.858	0.8271	8721.727	10.9930	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.081	0.8739	1.325	4.0806	12.6299	0.9723	1.0000	0.0003
LPT	0.84	2.438	0.8569	0.810	2.4380	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2539.39	6178.0
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2960	860.21
FanDuct	0.0000	0.5544	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.5924	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9069.1	2029.8	3505.0
LP_Shaft	2405.7	4486.4	2055.0

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8883	749.49	49.17	9.489
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2824	749.49	49.17	3.259
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	727.79	43.91	14.086
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	861.70	76.51	27.625
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	727.79	43.91	14.086
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	964.20	101.76	40.487
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	727.79	43.91	14.086

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6820	531.30	-3.42	6.639
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.7561	964.20	101.76	39.555
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.4116	964.20	101.76	22.357
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	964.20	101.76	40.487
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	964.20	101.76	40.487
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	964.20	101.76	40.487
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	475.48	-16.70	4.811
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.48	-16.70	4.811
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	475.48	-16.70	4.811
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.48	-16.70	4.811

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1693.14	0.9995	0.0230	0.19166	0.01077

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.142	0.9801	1.0000	0.9800	613.40	0.442	613.1	463.6
Byp_Nozz	1.686	0.9800	1.0000	0.9800	2006.86	0.897	872.6	6322.7

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*******************************************************************************************************************************************
Date:07/05/13    Time:09:50:15    Model:                              Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 10/ 24/ 1/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 456.76    Stator 1 exit: 463.69    Stator 2 inlet: 472.40    Stator 2 exit: 476.84
            Stator 3 inlet: 485.83    Stator 3 exit: 489.85    Stator 4 inlet: 498.26    Stator 4 exit: 501.67
            Stator 5 inlet: 508.57    Stator 5 exit: 511.54             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.23
Fan Bypass Relative Humidity       1.61
LPC Inlet Relative Humidity        1.45
LPC Exit Relative Humidity         0.13
HPC Relative Humidity              0.00
Drop Diameter                  0.0001000    Inlet Length                         40.00
Ambient Flow Velocity            723.11    Fan/LPC Inlet Flow Velocity         181.26
Ambient Static Pressure            2.95    Fan/LPC Inlet Static Pressure         4.11
Ambient Static Temperature       407.97    Fan/LPC Inlet Static Temperature    448.83
Additional Water at LPC Exit     0.0000171
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.730	38334.0	18.00	250.31	599.2	1.0981	657.95	8.6859	723.11	9.209	0.763	10.000	1667.1	1575.8	1096.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	250.31	4.201	451.57	-22.43	0.0000	816.94	2.947	407.97	2556.8	0.7300	1.40089	0.0000285	250.30	0.007	0.0000
FS1	Inlet.Fl_O	250.31	4.201	451.57	-22.43	0.0000	816.94	3.848	440.36	4168.2	0.3563	1.40089	0.0000285	250.30	0.007	0.0000
FS12	Splitter.Fl_02	224.46	4.199	451.57	-22.43	0.0000	732.96	3.798	438.77	3531.8	0.3813	1.40089	0.0000285	224.46	0.006	0.0000
FS2	Splitter.Fl_01	25.84	4.199	451.57	-22.43	0.0000	84.39	4.111	448.83	830.5	0.1745	1.40089	0.0000285	25.84	0.001	0.0000
FS14	Fan.Fl_O	224.46	4.706	468.12	-18.46	0.0000	665.89	3.972	445.95	2606.7	0.4981	1.40077	0.0000285	224.46	0.006	0.0000
FS23	LPC.Fl_O	25.84	6.402	520.42	-5.92	0.0000	59.42	6.125	513.88	412.6	0.2522	1.40021	0.0000285	25.84	0.001	0.0000
FS24	VaporIN.Fl_O	25.84	6.402	520.48	-6.01	0.0000	59.43	6.125	513.93	412.6	0.2523	1.40020	0.0000457	25.84	0.001	0.0000
FS25	Bleed2.Fl_O	23.26	6.402	520.48	-6.01	0.0000	53.48	6.180	515.24	412.6	0.2253	1.40020	0.0000457	23.26	0.001	0.0000
FS3	HPC.Fl_O	22.13	38.693	942.89	96.50	0.0000	11.33	34.091	910.27	49.7	0.4312	1.38415	0.0000457	22.13	0.001	0.0000
FS36	Bleed3.Fl_O	17.15	38.693	942.89	96.50	0.0000	8.78	36.049	924.53	49.3	0.3212	1.38415	0.0000457	17.15	0.001	0.0000
FS4	Burner.Fl_O	17.33	37.801	1667.10	84.39	0.0107	12.08	35.696	1643.30	74.6	0.2940	1.33418	0.0000457	17.15	0.001	0.0130
FS45	HPT.Fl_O	23.17	9.183	1100.94	-14.86	0.0080	54.02	8.342	1072.74	265.4	0.3770	1.36884	0.0000457	22.99	0.001	0.0098
FS49	LPT.Fl_O	23.44	3.309	873.11	-70.33	0.0079	135.06	3.137	860.29	860.2	0.2789	1.38294	0.0000457	23.26	0.001	0.0097
FS5	TEGV.Fl_O	23.44	3.309	873.18	-70.33	0.0079	135.07	3.137	860.36	860.2	0.2789	1.38293	0.0000457	23.26	0.001	0.0097
FS8	Core_Nozz.Fl_O	23.44	3.309	873.26	-70.33	0.0079	135.07	2.947	845.61	613.3	0.4127	1.38293	0.0000457	23.26	0.001	0.0097
FS17	FanDuctLkg.Fl_O	224.46	4.706	468.12	-18.46	0.0000	665.89	3.972	445.95	2606.7	0.4981	1.40077	0.0000285	224.46	0.006	0.0000
FS171	Bleed15.Fl_O	227.05	4.706	468.71	-18.32	0.0000	673.98	3.847	442.46	2481.9	0.5441	1.40077	0.0000287	227.04	0.007	0.0000
FS172	FanDuct.Fl_O	227.05	4.706	468.71	-18.32	0.0000	673.98	3.847	442.46	2481.9	0.5441	1.40077	0.0000287	227.04	0.007	0.0000
FS173	Byp_Nozz.Fl_O	227.05	4.706	468.71	-18.32	0.0000	673.98	2.947	409.94	2006.9	0.8457	1.40077	0.0000287	227.04	0.007	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	732.96	1.121	0.9043	2497.715	1.0367	0.9059	-1259.6	2278.15	54.78
LPC	84.39	1.525	0.8406	2497.715	1.1525	0.8498	-603.5	6.75	3.33
HPC	53.48	6.044	0.8179	8941.539	1.8116	0.8566	-3291.4	60.99	57.61
HPT	12.08	4.116	0.8726	219.375	1.3628	0.8499	3291.4		
LPT	54.02	2.775	0.8451	70.239	1.2589	0.8253	1863.1		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	851.63	1.118	0.9062	2473.899	0.0412	0.8607	1.0235	0.9980	0.9905
LPC	70.85	1.490	0.7766	0.660	0.0000	1.1909	1.0694	1.0825	0.0003
HPC	48.64	5.806	0.8263	8703.164	11.0057	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.030	0.8726	1.318	4.0300	12.6299	0.9723	1.0000	0.0003
LPT	0.83	2.335	0.8514	0.790	2.3350	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2556.78	5625.6

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2789	860.21
FanDuct	0.0000	0.5441	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.6859	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8957.1	1930.0	3291.4
LP_Shaft	2330.5	4198.6	1863.1

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8559	733.26	45.24	9.183
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2721	733.26	45.24	3.309
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	712.09	40.12	13.506
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	842.78	71.90	26.422
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	712.09	40.12	13.506
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	942.89	96.50	38.693
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	712.09	40.12	13.506

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5843	520.48	-6.01	6.402
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6557	942.89	96.50	37.801
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3238	942.89	96.50	21.432
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	942.89	96.50	38.693
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	942.89	96.50	38.693
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	942.89	96.50	38.693
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	468.12	-18.46	4.706
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	468.12	-18.46	4.706
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	468.12	-18.46	4.706
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	468.12	-18.46	4.706

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1667.04	0.9995	0.0230	0.18276	0.01066

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.123	0.9801	1.0000	0.9800	613.40	0.413	573.4	417.8
Byp_Nozz	1.597	0.9800	1.0000	0.9800	2006.86	0.846	822.9	5807.0

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**********************************************************************************************************************************
Date:07/05/13    Time:09:50:32    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 454.76    Stator 1 exit: 461.52    Stator 2 inlet: 470.01    Stator 2 exit: 474.34
            Stator 3 inlet: 483.09    Stator 3 exit: 487.00    Stator 4 inlet: 495.19    Stator 4 exit: 498.51
            Stator 5 inlet: 505.23    Stator 5 exit: 508.11            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.40
Fan Bypass Relative Humidity       1.75
LPC Inlet Relative Humidity        1.56
LPC Exit Relative Humidity         0.15
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          707.26    Fan/LPC Inlet Flow Velocity        178.69
Ambient Static Pressure          3.09    Fan/LPC Inlet Static Pressure        4.25
Ambient Static Temperature     407.97    Fan/LPC Inlet Static Temperature   447.01
Additional Water at LPC Exit   0.0000161
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.714	37357.0	18.00	257.06	614.3	1.0904	669.79	8.7249	707.26	9.092	0.772	10.000	1657.2	1566.2	1090.9

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	257.06	4.339	449.68	-22.87	0.0000	810.61	3.088	407.97	2561.5	0.7140	1.40090	0.0000272	257.05	0.007	0.0000
FS1	Inlet.Fl_O	257.06	4.339	449.68	-22.87	0.0000	810.61	3.981	438.72	4168.2	0.3530	1.40090	0.0000272	257.05	0.007	0.0000
FS12	Splitter.Fl_02	230.63	4.337	449.68	-22.87	0.0000	727.62	3.930	437.15	3531.8	0.3780	1.40090	0.0000272	230.62	0.006	0.0000
FS2	Splitter.Fl_01	26.43	4.337	449.68	-22.87	0.0000	83.40	4.248	447.01	830.5	0.1723	1.40090	0.0000272	26.43	0.001	0.0000
FS14	Fan.Fl_O	230.63	4.848	465.79	-19.01	0.0000	662.46	4.102	444.03	2606.7	0.4945	1.40079	0.0000272	230.62	0.006	0.0000
FS23	LPC.Fl_O	26.43	6.557	516.81	-6.78	0.0000	59.13	6.276	510.38	412.6	0.2509	1.40025	0.0000272	26.43	0.001	0.0000
FS24	VaporIN.Fl_O	26.43	6.557	516.86	-6.86	0.0000	59.14	6.276	510.43	412.6	0.2509	1.40025	0.0000433	26.43	0.001	0.0000
FS25	Bleed2.Fl_O	23.79	6.557	516.86	-6.86	0.0000	53.22	6.332	511.71	412.6	0.2241	1.40025	0.0000433	23.79	0.001	0.0000
FS3	HPC.Fl_O	22.64	39.453	935.42	94.66	0.0000	11.32	34.770	903.10	49.7	0.4307	1.38459	0.0000433	22.64	0.001	0.0000
FS36	Bleed3.Fl_O	17.54	39.453	935.42	94.66	0.0000	8.78	36.762	917.23	49.3	0.3209	1.38459	0.0000433	17.54	0.001	0.0000
FS4	Burner.Fl_O	17.73	38.544	1657.22	82.64	0.0106	12.08	36.397	1633.52	74.6	0.2940	1.33469	0.0000433	17.54	0.001	0.0130
FS45	HPT.Fl_O	23.70	9.404	1094.94	-15.66	0.0079	53.81	8.550	1067.13	265.4	0.3751	1.36926	0.0000433	23.51	0.001	0.0097
FS49	LPT.Fl_O	23.98	3.450	872.15	-69.85	0.0078	132.45	3.278	859.87	860.2	0.2730	1.38302	0.0000433	23.79	0.001	0.0096
FS5	TEGV.Fl_O	23.98	3.450	872.23	-69.85	0.0078	132.45	3.278	859.94	860.2	0.2730	1.38301	0.0000433	23.79	0.001	0.0096
FS8	Core_Nozz.Fl_O	23.98	3.450	872.30	-69.85	0.0078	132.46	3.088	845.95	613.4	0.4028	1.38301	0.0000433	23.79	0.001	0.0096
FS17	FanDuctLkg.Fl_O	230.63	4.848	465.79	-19.01	0.0000	662.46	4.102	444.03	2606.7	0.4945	1.40079	0.0000272	230.62	0.006	0.0000
FS171	Bleed15.Fl_O	233.27	4.848	466.37	-18.88	0.0000	670.47	3.976	440.63	2481.9	0.5399	1.40078	0.0000274	233.26	0.006	0.0000
FS172	FanDuct.Fl_O	233.27	4.848	466.37	-18.88	0.0000	670.47	3.976	440.63	2481.9	0.5399	1.40078	0.0000274	233.26	0.006	0.0000
FS173	Byp_Nozz.Fl_O	233.27	4.848	466.37	-18.88	0.0000	670.47	3.088	409.90	2006.9	0.8289	1.40078	0.0000274	233.26	0.006	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	727.62	1.118	0.9040	2472.405	1.0358	0.9055	-1260.0	2678.58	54.68
LPC	83.40	1.512	0.8407	2472.405	1.1493	0.8497	-601.8	6.67	3.26
HPC	53.22	6.017	0.8174	8933.055	1.8098	0.8562	-3334.5	61.04	57.63
HPT	12.08	4.099	0.8721	219.054	1.3617	0.8494	3334.5		
LPT	53.81	2.726	0.8431	69.571	1.2534	0.8234	1861.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	845.43	1.115	0.9058	2448.831	0.0412	0.8607	1.0235	0.9980	0.9905
LPC	69.76	1.479	0.7754	0.653	0.0000	1.1955	1.0683	1.0842	0.0003
HPC	48.41	5.780	0.8259	8694.906	11.0057	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.013	0.8721	1.316	4.0128	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.298	0.8493	0.783	2.2982	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2561.46	5650.8

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2730	860.21
FanDuct	0.0000	0.5399	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7249	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8917.4	1963.9	3334.5
LP_Shaft	2302.1	4247.7	1861.8

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	0.8755	727.65	43.90	9.404
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.2783	727.65	43.90	3.450
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	706.68	38.82	13.794
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	836.18	70.30	26.952
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	706.68	38.82	13.794
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	935.42	94.66	39.453
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	706.68	38.82	13.794

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.1000	1.0000	1.0000	2.6434	516.86	-6.86	6.557
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	2.7164	935.42	94.66	38.544
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.3769	935.42	94.66	21.876
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	935.42	94.66	39.453
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	935.42	94.66	39.453
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	935.42	94.66	39.453
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	465.79	-19.01	4.848
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	465.79	-19.01	4.848
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	465.79	-19.01	4.848
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	465.79	-19.01	4.848

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1657.16	0.9995	0.0230	0.18605	0.01061

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.117	0.9801	1.0000	0.9800	613.40	0.403	559.7	417.1
Byp_Nozz	1.570	0.9800	1.0000	0.9800	2006.86	0.829	806.6	5847.9

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**********************************************************************************************************************************
Date:07/05/13    Time:09:50:46    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 10/ 24/ 1/ 8    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 456.41    Stator 1 exit: 462.77    Stator 2 inlet: 470.73    Stator 2 exit: 474.78
            Stator 3 inlet: 482.99    Stator 3 exit: 486.63    Stator 4 inlet: 494.31    Stator 4 exit: 497.39
            Stator 5 inlet: 503.67    Stator 5 exit: 506.32            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.00
Fan Bypass Relative Humidity       2.26
LPC Inlet Relative Humidity        2.00
LPC Exit Relative Humidity         0.22
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          667.90    Fan/LPC Inlet Flow Velocity        173.05
Ambient Static Pressure          3.58    Fan/LPC Inlet Static Pressure        4.74
Ambient Static Temperature     414.42    Fan/LPC Inlet Static Temperature   449.11
Additional Water at LPC Exit   0.0000045
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.669	34281.0	18.00	278.57	669.4	1.0741	718.95	8.8070	667.90	8.757	0.795	10.000	1650.4	1559.3	1088.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	278.57	4.831	451.61	-22.45	0.0000	790.73	3.578	414.42	2577.4	0.6690	1.40088	0.0000348	278.56	0.010	0.0000
FS1	Inlet.Fl_O	278.57	4.831	451.61	-22.45	0.0000	790.73	4.453	441.21	4168.2	0.3430	1.40088	0.0000348	278.56	0.010	0.0000
FS12	Splitter.Fl_02	250.17	4.829	451.61	-22.45	0.0000	710.46	4.399	439.71	3531.8	0.3674	1.40088	0.0000348	250.16	0.009	0.0000
FS2	Splitter.Fl_01	28.41	4.829	451.61	-22.45	0.0000	80.67	4.736	449.11	830.5	0.1665	1.40088	0.0000348	28.40	0.001	0.0000
FS14	Fan.Fl_O	250.17	5.360	466.77	-18.82	0.0000	650.67	4.571	445.97	2606.7	0.4824	1.40078	0.0000348	250.16	0.009	0.0000
FS23	LPC.Fl_O	28.41	7.122	514.69	-7.33	0.0000	58.39	6.825	508.46	412.6	0.2475	1.40028	0.0000348	28.40	0.001	0.0000
FS24	VaporIN.Fl_O	28.41	7.122	514.73	-7.35	0.0000	58.39	6.825	508.49	412.6	0.2475	1.40028	0.0000393	28.40	0.001	0.0000
FS25	Bleed2.Fl_O	25.57	7.122	514.73	-7.35	0.0000	52.55	6.883	509.74	412.6	0.2211	1.40028	0.0000393	25.56	0.001	0.0000
FS3	HPC.Fl_O	24.33	42.305	928.59	93.00	0.0000	11.31	37.301	896.61	49.7	0.4298	1.38498	0.0000393	24.32	0.001	0.0000
FS36	Bleed3.Fl_O	18.85	42.305	928.59	93.00	0.0000	8.76	39.429	910.58	49.3	0.3203	1.38498	0.0000393	18.85	0.001	0.0000
FS4	Burner.Fl_O	19.05	41.330	1650.37	81.01	0.0106	12.08	39.028	1626.75	74.6	0.2940	1.33504	0.0000393	18.85	0.001	0.0130
FS45	HPT.Fl_O	25.47	10.192	1092.35	-16.13	0.0079	53.29	9.287	1065.22	265.4	0.3708	1.36944	0.0000393	25.26	0.001	0.0097
FS49	LPT.Fl_O	25.76	3.941	881.32	-67.40	0.0078	125.22	3.767	870.32	860.2	0.2568	1.38251	0.0000393	25.56	0.001	0.0096
FS5	TEGV.Fl_O	25.76	3.941	881.39	-67.40	0.0078	125.23	3.767	870.39	860.2	0.2568	1.38251	0.0000393	25.56	0.001	0.0096
FS8	Core_Nozz.Fl_O	25.76	3.941	881.46	-67.39	0.0078	125.23	3.578	858.15	613.4	0.3765	1.38250	0.0000393	25.56	0.001	0.0096
FS17	FanDuctLkg.Fl_O	250.17	5.360	466.77	-18.82	0.0000	650.67	4.571	445.97	2606.7	0.4824	1.40078	0.0000348	250.16	0.009	0.0000
FS171	Bleed15.Fl_O	253.01	5.360	467.31	-18.69	0.0000	658.44	4.440	442.79	2481.9	0.5256	1.40078	0.0000348	253.00	0.009	0.0000
FS172	FanDuct.Fl_O	253.01	5.360	467.31	-18.69	0.0000	658.44	4.440	442.79	2481.9	0.5256	1.40078	0.0000348	253.00	0.009	0.0000
FS173	Byp_Nozz.Fl_O	253.01	5.360	467.31	-18.69	0.0000	658.44	3.578	416.27	2006.9	0.7821	1.40078	0.0000348	253.00	0.009	0.0000

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	710.46	1.110	0.9032	2395.702	1.0336	0.9046	-1286.1	5792.75	54.21
LPC	80.67	1.475	0.8416	2395.702	1.1397	0.8501	-607.7	6.41	3.05
HPC	52.55	5.940	0.8161	8911.013	1.8040	0.8550	-3541.9	61.34	57.85
HPT	12.08	4.055	0.8716	218.515	1.3586	0.8490	3541.9		
LPT	53.29	2.586	0.8385	67.637	1.2372	0.8195	1893.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	825.48	1.108	0.9050	2372.859	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	66.44	1.445	0.7718	0.633	0.0000	1.2142	1.0674	1.0904	0.0003
HPC	47.80	5.707	0.8246	8673.452	10.9959	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.970	0.8716	1.313	3.9703	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.193	0.8448	0.761	2.1928	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2577.36	5782.9

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2568	860.21
FanDuct	0.0000	0.5256	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8070	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8877.1	2095.5	3541.9
LP_Shaft	2235.5	4449.5	1893.8

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9408	723.12	42.83	10.192
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2991	723.12	42.83	3.941
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.39	37.81	14.862
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	830.45	68.92	28.935
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.39	37.81	14.862
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	928.59	93.00	42.305
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.39	37.81	14.862

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.8406	514.73	-7.35	7.122
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.9190	928.59	93.00	41.330
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.5542	928.59	93.00	23.519
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	928.59	93.00	42.305
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	928.59	93.00	42.305
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	928.59	93.00	42.305
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	466.77	-18.82	5.360
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	466.77	-18.82	5.360
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	466.77	-18.82	5.360
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	466.77	-18.82	5.360

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1650.30	0.9995	0.0230	0.19971	0.01059

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.102	0.9801	1.0000	0.9800	613.40	0.376	526.7	421.8
Byp_Nozz	1.498	0.9800	1.0000	0.9800	2006.86	0.782	766.9	6030.4

****

Date:07/05/13 Time:09:51:03 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0

Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 13/ 27/ 1/11 Run by: Philip C Jorgenson PC: 10

Temperature Stator 1 inlet: 465.04 Stator 1 exit: 470.56 Stator 2 inlet: 477.37 Stator 2 exit: 480.66

Stator 3 inlet: 487.79 Stator 3 exit: 490.68 Stator 4 inlet: 497.38 Stator 4 exit: 499.77

Stator 5 inlet: 505.17 Stator 5 exit: 507.19 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	3.96		
Fan Bypass Relative Humidity	3.12		
LPC Inlet Relative Humidity	2.83		
LPC Exit Relative Humidity	0.47		
HPC Relative Humidity	0.00		
Drop Diameter	0.0001000	Inlet Length	40.00
Ambient Flow Velocity	617.99	Fan/LPC Inlet Flow Velocity	175.00
Ambient Static Pressure	4.36	Fan/LPC Inlet Static Pressure	5.49
Ambient Static Temperature	429.58	Fan/LPC Inlet Static Temperature	458.86
Additional Water at LPC Exit	0.0000076		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.608	30029.0	18.00	305.09	728.7	1.0768	784.65	8.3701	617.99	8.197	0.828	10.000	1654.7	1563.0	1093.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	305.09	5.595	461.42	-20.30	0.0000	755.81	4.358	429.58	2596.1	0.6080	1.40081	0.0000681	305.07	0.021	0.0001
FS1	Inlet.Fl_O	305.09	5.595	461.42	-20.30	0.0000	755.81	5.199	451.82	4168.2	0.3256	1.40081	0.0000681	305.07	0.021	0.0001
FS12	Splitter.Fl_02	272.53	5.592	461.42	-20.30	0.0000	675.49	5.147	450.59	3531.8	0.3462	1.40081	0.0000681	272.51	0.019	0.0001
FS2	Splitter.Fl_01	32.56	5.592	461.42	-20.30	0.0000	80.70	5.485	458.86	830.5	0.1666	1.40081	0.0000681	32.56	0.002	0.0001
FS14	Fan.Fl_O	272.53	6.139	475.25	-16.98	0.0000	624.50	5.321	456.19	2606.7	0.4566	1.40070	0.0000681	272.51	0.019	0.0001
FS23	LPC.Fl_O	32.56	7.825	515.83	-7.25	0.0000	60.98	7.468	508.98	412.6	0.2594	1.40026	0.0000681	32.56	0.002	0.0001
FS24	VaporIN.Fl_O	32.56	7.825	515.87	-7.29	0.0000	60.98	7.468	509.02	412.6	0.2594	1.40026	0.0000756	32.56	0.002	0.0001
FS25	Bleed2.Fl_O	27.68	7.825	515.87	-7.29	0.0000	51.84	7.571	511.01	412.6	0.2179	1.40026	0.0000756	27.67	0.002	0.0001
FS3	HPC.Fl_O	26.33	45.861	927.38	92.50	0.0000	11.28	40.463	895.60	49.7	0.4287	1.38505	0.0000756	26.33	0.002	0.0001
FS36	Bleed3.Fl_O	20.41	45.861	927.38	92.50	0.0000	8.74	42.758	909.48	49.3	0.3195	1.38505	0.0000756	20.41	0.002	0.0001
FS4	Burner.Fl_O	20.63	44.805	1654.74	80.41	0.0107	12.08	42.309	1631.07	74.6	0.2940	1.33476	0.0000756	20.41	0.002	0.0131
FS45	HPT.Fl_O	27.57	11.202	1097.92	-16.13	0.0080	52.62	10.234	1071.44	265.4	0.3654	1.36903	0.0000756	27.35	0.002	0.0098
FS49	LPT.Fl_O	27.89	4.717	904.47	-63.05	0.0079	114.77	4.543	895.13	860.2	0.2340	1.38114	0.0000756	27.67	0.002	0.0097
FS5	TEGV.Fl_O	27.89	4.717	904.54	-63.05	0.0079	114.77	4.543	895.20	860.2	0.2340	1.38113	0.0000756	27.67	0.002	0.0097
FS8	Core_Nozz.Fl_O	27.89	4.717	904.62	-63.05	0.0079	114.78	4.358	885.09	613.4	0.3400	1.38113	0.0000756	27.67	0.002	0.0097
FS17	FanDuctLkg.Fl_O	272.53	6.139	475.25	-16.98	0.0000	624.50	5.321	456.19	2606.7	0.4566	1.40070	0.0000681	272.51	0.019	0.0001
FS171	Bleed15.Fl_O	277.42	6.139	475.96	-16.81	0.0000	636.17	5.173	453.22	2481.9	0.5004	1.40070	0.0000682	277.40	0.019	0.0001
FS172	FanDuct.Fl_O	277.42	6.139	475.96	-16.81	0.0000	636.17	5.173	453.22	2481.9	0.5004	1.40070	0.0000682	277.40	0.019	0.0001
FS173	Byp_Nozz.Fl_O	277.42	6.139	475.96	-16.81	0.0000	636.17	4.358	431.52	2006.9	0.7168	1.40070	0.0000682	277.40	0.019	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	675.49	1.098	0.9021	2249.340	1.0300	0.9034	-1278.0	-9299.10	52.72
LPC	80.70	1.399	0.8552	2249.340	1.1179	0.8619	-601.0	5.96	2.63
HPC	51.84	5.861	0.8147	8887.506	1.7977	0.8536	-3812.6	61.60	58.03
HPT	12.08	4.000	0.8718	217.891	1.3544	0.8495	3812.6		
LPT	52.62	2.375	0.8303	64.028	1.2114	0.8124	1879.0		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	784.85	1.095	0.9039	2227.892	0.0416	0.8607	1.0235	0.9980	0.9905
LPC	60.32	1.382	0.7655	0.594	0.0000	1.3379	1.0458	1.1172	0.0003
HPC	47.14	5.632	0.8231	8650.571	10.9889	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.917	0.8718	1.310	3.9166	12.6299	0.9723	1.0000	0.0003
LPT	0.81	2.034	0.8365	0.720	2.0342	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2596.13	5860.1

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2340	860.21
FanDuct	0.0000	0.5004	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.3701	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8863.5	2259.2	3812.6
LP_Shaft	2121.6	4651.5	1879.0

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0185	723.08	42.61	11.202
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3238	723.08	42.61	4.717
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.46	37.62	16.193
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	829.79	68.55	31.408
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.46	37.62	16.193
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	927.38	92.50	45.861
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	702.46	37.62	16.193

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1500	1.0000	1.0000	4.8841	515.87	-7.29	7.825
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.1601	927.38	92.50	44.805
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.7651	927.38	92.50	25.584
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	927.38	92.50	45.861
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	927.38	92.50	45.861
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	927.38	92.50	45.861
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	475.25	-16.98	6.139
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.25	-16.98	6.139
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	475.25	-16.98	6.139
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	475.25	-16.98	6.139

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1654.68	0.9995	0.0230	0.21796	0.01068

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.082	0.9801	1.0000	0.9800	613.40	0.340	482.8	418.6
Byp_Nozz	1.409	0.9800	1.0000	0.9800	2006.86	0.717	715.6	6170.2

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**********************************************************************************************************************************
Date:07/05/13    Time:09:51:32    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 20/ 48/ 2/17    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 473.10    Stator 1 exit: 477.17    Stator 2 inlet: 481.78    Stator 2 exit: 483.58
            Stator 3 inlet: 488.71    Stator 3 exit: 490.11    Stator 4 inlet: 495.03    Stator 4 exit: 496.03
            Stator 5 inlet: 499.63    Stator 5 exit: 500.34            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.82
Fan Bypass Relative Humidity       3.94
LPC Inlet Relative Humidity        3.82
LPC Exit Relative Humidity         1.20
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          571.13    Fan/LPC Inlet Flow Velocity        194.56
Ambient Static Pressure          5.30    Fan/LPC Inlet Static Pressure        6.36
Ambient Static Temperature     445.14    Fan/LPC Inlet Static Temperature   469.17
Additional Water at LPC Exit   0.0000104

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.552   25666.0    18.00    330.53      748.0    1.1197     837.49    7.0489    571.13     7.334     0.859         10.000    1665.5   1571.5   1104.9


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht      FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O          330.53     6.516    472.33    -18.03   0.0000    711.36     5.297    445.14    2594.9  0.5520   1.40072   0.0001274    330.49    0.042    0.0001
FS1   Inlet.Fl_O            330.53     6.516    472.33    -18.03   0.0000    711.36     6.111    463.74    4168.2  0.3040   1.40072   0.0001274    330.49    0.042    0.0001
FS12  Splitter.Fl_02        289.47     6.513    472.33    -18.03   0.0000    623.29     6.078    463.08    3531.8  0.3157   1.40072   0.0001274    289.43    0.037    0.0001
FS2   Splitter.Fl_01         41.07     6.513    472.33    -18.03   0.0000     88.42     6.362    469.17     830.5  0.1832   1.40072   0.0001274     41.06    0.005    0.0001
FS14  Fan.Fl_O              289.47     7.057    484.46    -15.12   0.0000    582.62     6.258    468.09    2606.7  0.4177   1.40061   0.0001274    289.43    0.037    0.0001
FS23  LPC.Fl_O               41.07     8.205    511.58     -8.62   0.0000     73.04     7.654    501.50     412.6  0.3169   1.40031   0.0001274     41.06    0.005    0.0001
FS24  VaporIN.Fl_O           41.07     8.205    511.62     -8.66   0.0000     73.05     7.654    501.54     412.6  0.3169   1.40031   0.0001377     41.06    0.006    0.0001
FS25  Bleed2.Fl_O            28.75     8.205    511.62     -8.66   0.0000     51.13     7.946    506.94     412.6  0.2148   1.40031   0.0001377     28.74    0.004    0.0001
FS3   HPC.Fl_O               27.35    47.789    918.52     89.96   0.0000     11.19    42.268    887.62      49.7  0.4243   1.38555   0.0001377     27.35    0.004    0.0001
FS36  Bleed3.Fl_O            21.20    47.789    918.52     89.96   0.0000      8.67    44.611    901.08      49.3  0.3166   1.38555   0.0001377     21.19    0.003    0.0001
FS4   Burner.Fl_O            21.43    46.689   1665.49     77.57   0.0110     12.09    44.085   1641.70      74.6  0.2942   1.33402   0.0001377     21.19    0.003    0.0135
FS45  HPT.Fl_O               28.64    12.029   1109.28    -17.71   0.0082     51.17    11.052   1084.25     265.4  0.3537   1.36812   0.0001377     28.41    0.004    0.0102
FS49  LPT.Fl_O               28.98     5.626    936.96    -59.42   0.0081    101.74     5.464    929.48     860.2  0.2061   1.37906   0.0001377     28.74    0.004    0.0101
FS5   TEGV.Fl_O              28.98     5.626    937.04    -59.42   0.0081    101.74     5.464    929.55     860.2  0.2061   1.37905   0.0001377     28.74    0.004    0.0101
FS8   Core_Nozz.Fl_O         28.98     5.626    937.11    -59.42   0.0081    101.75     5.297    921.69     613.4  0.2968   1.37905   0.0001377     28.74    0.004    0.0101
FS17  FanDuctLkg.Fl_O       289.47     7.057    484.46    -15.12   0.0000    582.62     6.258    468.09    2606.7  0.4177   1.40061   0.0001274    289.43    0.037    0.0001
FS171 Bleed15.Fl_O          301.79     7.057    485.57    -14.86   0.0000    608.11     6.063    464.94    2481.9  0.4705   1.40060   0.0001278    301.75    0.039    0.0001
FS172 FanDuct.Fl_O          301.79     7.057    485.57    -14.86   0.0000    608.11     6.063    464.94    2481.9  0.4705   1.40060   0.0001278    301.75    0.039    0.0001
FS173 Byp_Nozz.Fl_O         301.79     7.057    485.57    -14.86   0.0000    608.11     5.297    447.31    2006.9  0.6533   1.40060   0.0001278    301.75    0.039    0.0001

TURBOMACHINERY PERFORMANCE DATA
                Wc      PR       eff        Nc        TR    efPoly        pwr       SMN      SMW
Fan         623.29   1.083    0.9032  2044.521    1.0257    0.9043    -1190.8  -2764.78    49.88
LPC          88.42   1.260    0.8217  2044.521    1.0831    0.8274     -546.8      6.38     2.41
HPC          51.13   5.824    0.8139  8865.647    1.7953    0.8529    -3913.9     60.72    57.10
HPT          12.09   3.881    0.8732   215.758    1.3457    0.8517     3913.9
LPT          51.17   2.138    0.8210    58.579    1.1810    0.8047     1737.6

TURBOMACHINERY MAP DATA
             WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan         724.20   1.082   0.9050   2025.027    0.0425      0.8607    1.0235    0.9980    0.9905
LPC          53.47   1.311   0.7607      0.540    0.0000      1.6538    0.8353    1.0801    0.0003
HPC          46.51   5.597   0.8223   8629.294   11.0519      1.0995    1.0494    0.9898    0.9733
HPT           0.96   3.801   0.8732      1.297    3.8014     12.6299    0.9723    1.0000    0.0003
LPT           0.78   1.856   0.8271      0.659    1.8560     65.2590    0.7521    0.9926    0.0005
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===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2594.94	5867.3
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2061	860.21
FanDuct	0.0000	0.4705	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.0489	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8805.2	2334.6	3913.9
LP_Shaft	1951.0	4677.5	1737.6

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0579	716.45	40.65	12.029
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3363	716.45	40.65	5.626
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	696.06	35.72	16.914
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	821.98	66.29	32.747
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	696.06	35.72	16.914
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	918.52	89.96	47.789
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	696.06	35.72	16.914

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.3000	1.0000	1.0000	12.3197	511.62	-8.66	8.205
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.2822	918.52	89.96	46.689
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.8720	918.52	89.96	26.863
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	918.52	89.96	47.789
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	918.52	89.96	47.789
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	918.52	89.96	47.789
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	484.46	-15.12	7.057
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	484.46	-15.12	7.057
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	484.46	-15.12	7.057
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	484.46	-15.12	7.057

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1665.43	0.9995	0.0230	0.23264	0.01098

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.062	0.9801	1.0000	0.9800	613.40	0.297	429.8	387.1
Byp_Nozz	1.332	0.9800	1.0000	0.9800	2006.86	0.653	664.0	6228.2

****

Date:07/05/13 Time:09:52:03 Model: Turbofan Engine - COMDES ON converge = 1 CASE: 0
Version:NPSS_1.6.5 - Rev: -> Gas Package: Janaf iter/pass/Jacb/Broy= 26/ 54/ 2/23 Run by: Philip C Jorgenson PC: 10
Temperature Stator 1 inlet: 486.26 Stator 1 exit: 489.21 Stator 2 inlet: 491.94 Stator 2 exit: 492.70
Stator 3 inlet: 496.02 Stator 3 exit: 496.35 Stator 4 inlet: 499.59 Stator 4 exit: 499.62
Stator 5 inlet: 501.46 Stator 5 exit: 501.30 Unblocked Percent Blockage: 0.00

Ambient Relative Humidity	10.00		
Fan Face Relative Humidity	5.85		
Fan Bypass Relative Humidity	4.91		
LPC Inlet Relative Humidity	5.02		
LPC Exit Relative Humidity	2.62		
HPC Relative Humidity	0.01		
Drop Diameter	0.0001000	Inlet Length	40.00
Ambient Flow Velocity	518.26	Fan/LPC Inlet Flow Velocity	204.34
Ambient Static Pressure	6.74	Fan/LPC Inlet Static Pressure	7.74
Ambient Static Temperature	465.18	Fan/LPC Inlet Static Temperature	484.08
Additional Water at LPC Exit	0.0000163		

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.490	20047.0	18.00	368.14	831.4	1.1216	932.52	6.2369	518.26	6.453	0.890	10.000	1698.5	1600.5	1135.6

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	368.14	7.943	487.56	-15.16	0.0000	660.35	6.740	465.18	2615.9	0.4900	1.40057	0.0002627	368.04	0.097	0.0003
FS1	Inlet.Fl_O	368.14	7.943	487.56	-15.16	0.0000	660.35	7.522	480.02	4168.2	0.2799	1.40057	0.0002627	368.04	0.097	0.0003
FS12	Splitter.Fl_02	317.27	7.939	487.56	-15.16	0.0000	569.39	7.503	479.73	3531.8	0.2854	1.40057	0.0002627	317.18	0.083	0.0003
FS2	Splitter.Fl_01	50.87	7.939	487.56	-15.16	0.0000	91.29	7.743	484.08	830.5	0.1894	1.40057	0.0002627	50.86	0.013	0.0003
FS14	Fan.Fl_O	317.27	8.512	498.38	-12.56	0.0000	536.96	7.712	484.52	2606.7	0.3780	1.40045	0.0002627	317.18	0.083	0.0003
FS23	LPC.Fl_O	50.87	9.077	515.17	-8.54	0.0000	82.08	8.289	501.96	412.6	0.3626	1.40024	0.0002627	50.86	0.013	0.0003
FS24	VaporIN.Fl_O	50.87	9.077	515.22	-8.62	0.0000	82.09	8.288	502.01	412.6	0.3627	1.40024	0.0002790	50.86	0.014	0.0003
FS25	Bleed2.Fl_O	30.52	9.077	515.22	-8.62	0.0000	49.25	8.811	510.86	412.6	0.2065	1.40024	0.0002790	30.51	0.009	0.0003
FS3	HPC.Fl_O	29.04	51.257	917.82	88.98	0.0000	11.08	45.477	887.72	49.7	0.4188	1.38557	0.0002790	29.03	0.008	0.0003
FS36	Bleed3.Fl_O	22.51	51.257	917.82	88.98	0.0000	8.58	47.924	900.79	49.3	0.3129	1.38557	0.0002790	22.50	0.006	0.0003
FS4	Burner.Fl_O	22.77	50.076	1698.52	76.01	0.0115	12.09	47.282	1674.33	74.6	0.2946	1.33205	0.0002790	22.50	0.006	0.0143
FS45	HPT.Fl_O	30.42	13.552	1140.27	-18.07	0.0086	48.92	12.555	1117.14	265.4	0.3361	1.36582	0.0002790	30.16	0.008	0.0108
FS49	LPT.Fl_O	30.78	7.047	987.01	-55.10	0.0085	88.55	6.895	981.14	860.2	0.1785	1.37573	0.0002790	30.51	0.009	0.0107
FS5	TEGV.Fl_O	30.78	7.047	987.08	-55.10	0.0085	88.55	6.895	981.21	860.2	0.1785	1.37572	0.0002790	30.51	0.009	0.0107
FS8	Core_Nozz.Fl_O	30.78	7.047	987.15	-55.10	0.0085	88.56	6.740	975.21	613.4	0.2552	1.37572	0.0002790	30.51	0.009	0.0107
FS17	FanDuctLkg.Fl_O	317.27	8.512	498.38	-12.56	0.0000	536.96	7.712	484.52	2606.7	0.3780	1.40045	0.0002627	317.18	0.083	0.0003
FS171	Bleed15.Fl_O	337.62	8.512	499.40	-12.32	0.0000	571.98	7.477	481.22	2481.9	0.4343	1.40044	0.0002637	337.53	0.089	0.0003
FS172	FanDuct.Fl_O	337.62	8.512	499.40	-12.32	0.0000	571.98	7.477	481.22	2481.9	0.4343	1.40044	0.0002637	337.53	0.089	0.0003
FS173	Byp_Nozz.Fl_O	337.62	8.512	499.40	-12.32	0.0000	571.98	6.740	467.15	2006.9	0.5870	1.40044	0.0002637	337.53	0.089	0.0003

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	569.39	1.072	0.9054	1848.588	1.0222	0.9063	-1165.6	-1881.76	46.42
LPC	91.29	1.143	0.6892	1848.588	1.0566	0.6951	-476.7	6.97	2.19
HPC	49.25	5.647	0.8099	8804.864	1.7814	0.8491	-4112.6	60.54	56.71
HPT	12.09	3.695	0.8752	212.931	1.3307	0.8549	4112.6		
LPT	48.92	1.923	0.8141	53.076	1.1519	0.7997	1642.3		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	661.57	1.070	0.9072	1830.961	0.0438	0.8607	1.0235	0.9980	0.9905
LPC	47.03	1.247	0.7558	0.488	0.0000	1.9411	0.5800	0.9119	0.0003
HPC	44.79	5.428	0.8182	8570.132	11.0891	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.621	0.8752	1.280	3.6205	12.6299	0.9723	1.0000	0.0003
LPT	0.75	1.694	0.8201	0.597	1.6942	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2615.92	5930.0

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1785	860.21
FanDuct	0.0000	0.4343	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.2369	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8775.5	2461.4	4112.6
LP_Shaft	1792.3	4812.6	1642.3

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.1232	717.88	40.18	13.552
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3571	717.88	40.18	7.047
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	697.71	35.30	18.357
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	822.29	65.56	35.228
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	697.71	35.30	18.357
WBLKG HPC.1>	0.0000	1.0000	1.0000	0.0000	917.82	88.98	51.257
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	697.71	35.30	18.357

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.4000	1.0000	1.0000	20.3483	515.22	-8.62	9.077
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.4850	917.82	88.98	50.076
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	3.0495	917.82	88.98	29.184
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	917.82	88.98	51.257
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	917.82	88.98	51.257
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	917.82	88.98	51.257
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	498.38	-12.56	8.512
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	498.38	-12.56	8.512
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	498.38	-12.56	8.512
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	498.38	-12.56	8.512

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1698.45	0.9995	0.0230	0.25903	0.01151

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.046	0.9801	1.0000	0.9800	613.40	0.255	379.7	363.2
Byp_Nozz	1.263	0.9800	1.0000	0.9800	2006.86	0.587	609.7	6398.1

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**********************************************************************************************************************************
Date:07/05/13    Time:09:52:30    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 22/ 50/ 2/19    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 500.26    Stator 1 exit: 502.62    Stator 2 inlet: 504.93    Stator 2 exit: 505.65
            Stator 3 inlet: 508.35    Stator 3 exit: 508.74    Stator 4 inlet: 511.35    Stator 4 exit: 511.51
            Stator 5 inlet: 513.10    Stator 5 exit: 513.12            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         6.53
Fan Bypass Relative Humidity       5.96
LPC Inlet Relative Humidity        5.71
LPC Exit Relative Humidity         3.40
HPC Relative Humidity              0.01
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          479.99    Fan/LPC Inlet Flow Velocity        173.50
Ambient Static Pressure          8.15    Fan/LPC Inlet Static Pressure        9.17
Ambient Static Temperature     481.63    Fan/LPC Inlet Static Temperature   498.31
Additional Water at LPC Exit   0.0000240
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SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.446	15435.0	18.00	386.68	641.0	1.3790	884.01	6.7784	479.99	5.288	0.902	10.000	1649.7	1553.9	1125.3

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	386.68	9.342	500.81	-13.05	0.0000	597.73	8.149	481.63	2540.9	0.4460	1.40040	0.0004484	386.51	0.173	0.0004
FS1	Inlet.Fl_O	386.68	9.342	500.81	-13.05	0.0000	597.73	8.941	494.57	4168.2	0.2511	1.40040	0.0004484	386.51	0.173	0.0004
FS12	Splitter.Fl_02	336.97	9.337	500.81	-13.05	0.0000	521.14	8.912	494.17	3531.8	0.2590	1.40040	0.0004484	336.82	0.151	0.0004
FS2	Splitter.Fl_01	49.71	9.337	500.81	-13.05	0.0000	76.88	9.175	498.31	830.5	0.1585	1.40040	0.0004484	49.69	0.022	0.0004
FS14	Fan.Fl_O	336.97	9.813	508.79	-11.14	0.0000	499.81	9.027	496.79	2606.7	0.3474	1.40030	0.0004484	336.82	0.151	0.0004
FS23	LPC.Fl_O	49.71	10.430	523.17	-7.69	0.0000	70.35	9.784	513.68	412.6	0.3037	1.40011	0.0004484	49.69	0.022	0.0004
FS24	VaporIN.Fl_O	49.71	10.430	523.23	-7.81	0.0000	70.35	9.784	513.74	412.6	0.3038	1.40011	0.0004723	49.69	0.023	0.0005
FS25	Bleed2.Fl_O	29.83	10.430	523.23	-7.81	0.0000	42.21	10.208	520.01	412.6	0.1758	1.40011	0.0004723	29.81	0.014	0.0005
FS3	HPC.Fl_O	28.38	49.398	887.55	80.44	0.0000	11.05	43.865	858.56	49.7	0.4171	1.38724	0.0004723	28.37	0.013	0.0005
FS36	Bleed3.Fl_O	22.00	49.398	887.55	80.44	0.0000	8.56	46.206	871.14	49.3	0.3117	1.38724	0.0004723	21.99	0.010	0.0005
FS4	Burner.Fl_O	22.24	48.260	1649.74	67.94	0.0112	12.08	45.573	1626.17	74.6	0.2940	1.33460	0.0004723	21.99	0.010	0.0141
FS45	HPT.Fl_O	29.72	14.273	1129.99	-16.95	0.0083	45.17	13.390	1110.77	265.4	0.3069	1.36663	0.0004723	29.47	0.014	0.0107
FS49	LPT.Fl_O	30.07	8.396	1005.97	-46.64	0.0082	73.31	8.272	1001.92	860.2	0.1469	1.37467	0.0004723	29.81	0.014	0.0106
FS5	TEGV.Fl_O	30.07	8.396	1006.04	-46.64	0.0082	73.31	8.272	1001.99	860.2	0.1469	1.37466	0.0004723	29.81	0.014	0.0106
FS8	Core_Nozz.Fl_O	30.07	8.396	1006.11	-46.64	0.0082	73.32	8.149	997.96	613.4	0.2087	1.37466	0.0004723	29.81	0.014	0.0106
FS17	FanDuctLkg.Fl_O	336.97	9.813	508.79	-11.14	0.0000	499.81	9.027	496.79	2606.7	0.3474	1.40030	0.0004484	336.82	0.151	0.0004
FS171	Bleed15.Fl_O	356.86	9.813	509.59	-10.95	0.0000	529.73	8.814	494.18	2481.9	0.3947	1.40029	0.0004497	356.69	0.160	0.0004
FS172	FanDuct.Fl_O	356.86	9.813	509.59	-10.95	0.0000	529.73	8.814	494.18	2481.9	0.3947	1.40029	0.0004497	356.69	0.160	0.0004
FS173	Byp_Nozz.Fl_O	356.86	9.813	509.59	-10.95	0.0000	529.73	8.149	483.23	2006.9	0.5220	1.40029	0.0004497	356.69	0.160	0.0004

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	521.14	1.051	0.8982	1610.080	1.0159	0.8989	-912.3	-1526.14	44.72
LPC	76.88	1.117	0.7202	1610.080	1.0446	0.7246	-377.2	8.26	1.96
HPC	42.21	4.736	0.7955	8540.497	1.6963	0.8340	-3634.0	68.25	63.03
HPT	12.08	3.381	0.8666	211.191	1.3031	0.8466	3634.0		
LPT	45.17	1.700	0.8004	47.065	1.1197	0.7881	1289.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	605.52	1.050	0.9000	1594.728	0.0442	0.8607	1.0235	0.9980	0.9905
LPC	39.69	1.184	0.7480	0.425	0.0000	1.9368	0.6353	0.9629	0.0003
HPC	38.39	4.560	0.8038	8312.813	10.7602	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.315	0.8666	1.269	3.3152	12.6299	0.9723	1.0000	0.0003
LPT	0.69	1.526	0.8063	0.529	1.5265	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2540.86	5768.7

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1469	860.21
FanDuct	0.0000	0.3947	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.7784	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8577.9	2225.0	3634.0
LP_Shaft	1582.1	4280.9	1289.5

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0977	706.47	36.31	14.273
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3490	706.47	36.31	8.396
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	688.22	31.90	19.003
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	800.98	59.26	34.590
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	688.22	31.90	19.003
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	887.55	80.44	49.398
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	688.22	31.90	19.003

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.4000	1.0000	1.0000	19.8855	523.23	-7.81	10.430
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.4058	887.55	80.44	48.260
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.9801	887.55	80.44	28.819
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	887.55	80.44	49.398
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	887.55	80.44	49.398
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	887.55	80.44	49.398
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	508.79	-11.14	9.813
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	508.79	-11.14	9.813
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	508.79	-11.14	9.813
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	508.79	-11.14	9.813

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1649.68	0.9995	0.0230	0.24556	0.01117

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.030	0.9802	1.0000	0.9800	613.40	0.209	314.0	293.5
Byp_Nozz	1.204	0.9800	1.0000	0.9800	2006.86	0.522	551.4	6116.3

100μm, ISA +36R

```
**********************************************************************************************************************************
Date:07/05/13    Time:10:02:31    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 483.67    Stator 1 exit: 491.43    Stator 2 inlet: 501.19    Stator 2 exit: 506.18
            Stator 3 inlet: 516.27    Stator 3 exit: 520.81    Stator 4 inlet: 530.25    Stator 4 exit: 534.11
            Stator 5 inlet: 541.87    Stator 5 exit: 545.24            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         1.97
Fan Bypass Relative Humidity       1.41
LPC Inlet Relative Humidity        1.30
LPC Exit Relative Humidity         0.13
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          789.49    Fan/LPC Inlet Flow Velocity        192.99
Ambient Static Pressure          2.85    Fan/LPC Inlet Static Pressure        4.17
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   474.82
Additional Water at LPC Exit   0.0000145
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.780	39000.0	36.00	252.16	617.4	1.1455	707.23	8.5613	789.49	9.518	0.736	10.000	1759.2	1664.4	1158.2

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	252.16	4.267	477.92	-16.44	0.0000	833.70	2.854	425.97	2543.5	0.7800	1.40068	0.0000851	252.14	0.021	0.0001
FS1	Inlet.Fl_O	252.16	4.267	477.92	-16.44	0.0000	833.70	3.892	465.50	4168.2	0.3649	1.40068	0.0000851	252.14	0.021	0.0001
FS12	Splitter.Fl_02	225.79	4.265	477.92	-16.44	0.0000	746.88	3.839	463.78	3531.8	0.3902	1.40068	0.0000851	225.77	0.019	0.0001
FS2	Splitter.Fl_01	26.37	4.265	477.92	-16.44	0.0000	87.24	4.169	474.82	830.5	0.1806	1.40068	0.0000851	26.37	0.002	0.0001
FS14	Fan.Fl_O	225.79	4.817	496.63	-11.96	0.0000	674.07	4.042	472.33	2606.7	0.5067	1.40049	0.0000851	225.77	0.019	0.0001
FS23	LPC.Fl_O	26.37	6.654	555.02	2.05	0.0000	60.25	6.357	547.83	412.6	0.2561	1.39968	0.0000851	26.37	0.002	0.0001
FS24	VaporIN.Fl_O	26.37	6.654	555.07	1.98	0.0000	60.26	6.357	547.89	412.6	0.2561	1.39967	0.0000996	26.37	0.003	0.0001
FS25	Bleed2.Fl_O	23.74	6.654	555.07	1.98	0.0000	54.23	6.416	549.33	412.6	0.2287	1.39967	0.0000996	23.73	0.002	0.0001
FS3	HPC.Fl_O	22.58	40.610	1006.19	111.88	0.0000	11.38	35.727	971.22	49.7	0.4343	1.38033	0.0000996	22.58	0.002	0.0001
FS36	Bleed3.Fl_O	17.50	40.610	1006.19	111.88	0.0000	8.82	37.808	986.54	49.3	0.3233	1.38033	0.0000996	17.50	0.002	0.0001
FS4	Burner.Fl_O	17.70	39.675	1759.21	98.98	0.0112	12.07	37.468	1734.38	74.6	0.2944	1.32947	0.0000996	17.50	0.002	0.0138
FS45	HPT.Fl_O	23.65	9.522	1162.39	-7.41	0.0084	54.65	8.626	1132.04	265.4	0.3829	1.36457	0.0000996	23.46	0.002	0.0103
FS49	LPT.Fl_O	23.93	3.261	910.13	-69.34	0.0083	142.85	3.070	895.08	860.2	0.2970	1.38054	0.0000996	23.73	0.002	0.0102
FS5	TEGV.Fl_O	23.93	3.261	910.20	-69.34	0.0083	142.86	3.070	895.15	860.2	0.2970	1.38054	0.0000996	23.73	0.002	0.0102
FS8	Core_Nozz.Fl_O	23.93	3.261	910.27	-69.34	0.0083	142.86	2.854	877.34	613.4	0.4435	1.38053	0.0000996	23.73	0.002	0.0102
FS17	FanDuctLkg.Fl_O	225.79	4.817	496.63	-11.96	0.0000	674.07	4.042	472.33	2606.7	0.5067	1.40049	0.0000851	225.77	0.019	0.0001
FS171	Bleed15.Fl_O	228.42	4.817	497.30	-11.80	0.0000	682.41	3.908	468.44	2481.9	0.5546	1.40048	0.0000852	228.40	0.019	0.0001
FS172	FanDuct.Fl_O	228.42	4.817	497.30	-11.80	0.0000	682.41	3.908	468.44	2481.9	0.5546	1.40048	0.0000852	228.40	0.019	0.0001
FS173	Byp_Nozz.Fl_O	228.42	4.817	497.30	-11.80	0.0000	682.41	2.854	428.14	2006.9	0.8978	1.40048	0.0000852	228.40	0.019	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	746.88	1.129	0.9055	2568.019	1.0391	0.9071	-1432.4	1611.24	54.83
LPC	87.24	1.560	0.8406	2568.019	1.1613	0.8503	-690.1	6.97	3.73
HPC	54.23	6.103	0.8187	8965.376	1.8127	0.8573	-3601.3	61.35	58.03
HPT	12.07	4.167	0.8772	221.125	1.3648	0.8551	3601.3		
LPT	54.65	2.920	0.8556	72.303	1.2754	0.8360	2122.5		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	867.80	1.127	0.9073	2543.533	0.0414	0.8607	1.0235	0.9980	0.9905
LPC	73.90	1.522	0.7799	0.678	0.0000	1.1805	1.0736	1.0778	0.0003
HPC	49.32	5.863	0.8271	8726.365	10.9747	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.079	0.8771	1.329	4.0790	12.6299	0.9723	1.0000	0.0003
LPT	0.84	2.444	0.8620	0.813	2.4438	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2543.46	6187.5

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2970	860.21
FanDuct	0.0000	0.5546	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.5613	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9274.6	2039.4	3601.3
LP_Shaft	2465.1	4522.2	2122.5

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8735	782.68	56.93	9.522
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2777	782.68	56.93	3.261
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	760.07	51.44	14.124
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	899.55	85.51	27.707
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	760.07	51.44	14.124
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	1006.19	111.88	40.610
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	760.07	51.44	14.124

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.6373	555.07	1.98	6.654
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.7102	1006.19	111.88	39.675
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3715	1006.19	111.88	22.428
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1006.19	111.88	40.610
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1006.19	111.88	40.610
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	1006.19	111.88	40.610
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	496.63	-11.96	4.817
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	496.63	-11.96	4.817
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	496.63	-11.96	4.817
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	496.63	-11.96	4.817

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1759.16	0.9995	0.0230	0.19645	0.01122

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.143	0.9801	1.0000	0.9800	613.40	0.443	627.1	466.5
Byp_Nozz	1.688	0.9800	1.0000	0.9800	2006.86	0.898	892.8	6338.4

```
**********************************************************************************************************************************
Date:07/05/13    Time:10:02:47    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 476.90    Stator 1 exit: 484.18    Stator 2 inlet: 493.31    Stator 2 exit: 497.96
            Stator 3 inlet: 507.40    Stator 3 exit: 511.61    Stator 4 inlet: 520.43    Stator 4 exit: 524.01
            Stator 5 inlet: 531.25    Stator 5 exit: 534.37            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.46
Fan Bypass Relative Humidity       1.80
LPC Inlet Relative Humidity        1.64
LPC Exit Relative Humidity         0.18
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          738.88    Fan/LPC Inlet Flow Velocity        186.04
Ambient Static Pressure          2.95    Fan/LPC Inlet Static Pressure        4.11
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   468.59
Additional Water at LPC Exit   0.0000133

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.730   38334.0    36.00    245.31      606.9    1.1102     673.74    8.6582    738.88     9.232     0.764         10.000    1731.7   1637.5   1141.4


                                        FLOW STATION DATA
                                  W        Pt        Tt        ht       FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O           245.31     4.201    471.48    -17.97    0.0000    818.12     2.947    425.97    2560.6  0.7300   1.40073   0.0000824    245.29    0.020    0.0001
FS1   Inlet.Fl_O             245.31     4.201    471.48    -17.97    0.0000    818.12     3.847    459.74    4168.2  0.3569   1.40073   0.0000824    245.29    0.020    0.0001
FS12  Splitter.Fl_02         219.91     4.199    471.48    -17.97    0.0000    733.78     3.797    458.09    3531.8  0.3819   1.40073   0.0000824    219.89    0.018    0.0001
FS2   Splitter.Fl_01          25.40     4.199    471.48    -17.97    0.0000     84.75     4.110    468.59     830.5  0.1753   1.40073   0.0000824     25.40    0.002    0.0001
FS14  Fan.Fl_O               219.91     4.711    488.91    -13.79    0.0000    666.03     3.976    465.74    2606.7  0.4982   1.40058   0.0000824    219.89    0.018    0.0001
FS23  LPC.Fl_O                25.40     6.414    543.66     -0.66    0.0000     59.58     6.135    536.79     412.6  0.2530   1.39986   0.0000824     25.40    0.002    0.0001
FS24  VaporIN.Fl_O            25.40     6.414    543.71     -0.72    0.0000     59.58     6.135    536.84     412.6  0.2530   1.39985   0.0000957     25.40    0.002    0.0001
FS25  Bleed2.Fl_O             22.86     6.414    543.71     -0.72    0.0000     53.62     6.190    538.22     412.6  0.2260   1.39985   0.0000957     22.86    0.002    0.0001
FS3   HPC.Fl_O               21.75    38.786    983.85    106.36    0.0000     11.35    34.154    949.83      49.7  0.4325   1.38170   0.0000957     21.75    0.002    0.0001
FS36  Bleed3.Fl_O             16.86    38.786    983.85    106.36    0.0000      8.80    36.126    964.72      49.3  0.3221   1.38170   0.0000957     16.86    0.002    0.0001
FS4   Burner.Fl_O             17.04    37.892   1731.72     93.65    0.0111     12.08    35.783   1707.18      74.6  0.2944   1.33081   0.0000957     16.86    0.002    0.0136
FS45  HPT.Fl_O                22.78     9.210   1145.62     -9.98    0.0083     54.02     8.365   1116.44      265.4  0.3774   1.36571   0.0000957     22.59    0.002    0.0102
FS49  LPT.Fl_O                23.05     3.311    907.82    -68.20    0.0082    135.33     3.138    894.49      860.2  0.2797   1.38074   0.0000957     22.86    0.002    0.0101
FS5   TEGV.Fl_O               23.05     3.311    907.90    -68.20    0.0082    135.33     3.138    894.56      860.2  0.2797   1.38073   0.0000957     22.86    0.002    0.0101
FS8   Core_Nozz.Fl_O          23.05     3.311    907.97    -68.20    0.0082    135.34     2.947    879.20      613.4  0.4141   1.38073   0.0000957     22.86    0.002    0.0101
FS17  FanDuctLkg.Fl_O        219.91     4.711    488.91    -13.79    0.0000    666.03     3.976    465.74    2606.7  0.4982   1.40058   0.0000824    219.89    0.018    0.0001
FS171 Bleed15.Fl_O           222.45     4.711    489.53    -13.64    0.0000    674.15     3.851    462.10    2481.9  0.5444   1.40057   0.0000825    222.43    0.018    0.0001
FS172 FanDuct.Fl_O           222.45     4.711    489.53    -13.64    0.0000    674.15     3.851    462.10    2481.9  0.5444   1.40057   0.0000825    222.43    0.018    0.0001
FS173 Byp_Nozz.Fl_O          222.45     4.711    489.53    -13.64    0.0000    674.15     2.947    428.03    2006.9  0.8467   1.40057   0.0000825    222.43    0.018    0.0001

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff        Nc        TR    efPoly       pwr       SMN      SMW
Fan       733.78   1.122    0.9047  2504.141    1.0370    0.9062   -1300.1   2192.51    54.69
LPC        84.75   1.527    0.8409  2504.141    1.1531    0.8501    -622.2      6.78     3.35
HPC        53.62   6.047    0.8179  8945.792    1.8095    0.8566   -3379.3     61.27    57.90
HPT        12.08   4.114    0.8759   220.099    1.3615    0.8539    3379.3
LPT        54.02   2.781    0.8500    70.538    1.2600    0.8307    1922.3

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan        852.58   1.119   0.9065  2480.264    0.0413      0.8607    1.0235    0.9980    0.9905
LPC         71.13   1.493   0.7769     0.661    0.0000      1.1914    1.0692    1.0824    0.0003
HPC         48.77   5.809   0.8263  8707.303   10.9865      1.0995    1.0494    0.9898    0.9733
HPT          0.96   4.028   0.8759     1.323    4.0281     12.6299    0.9723    1.0000    0.0003
LPT          0.83   2.340   0.8563     0.793    2.3398     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2560.58	5633.6

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2797	860.21
FanDuct	0.0000	0.5444	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.6582	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9159.2	1937.8	3379.3
LP_Shaft	2387.5	4228.7	1922.3

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8412	765.65	52.82	9.210
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2675	765.65	52.82	3.311
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	743.59	47.46	13.536
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	879.71	80.66	26.485
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	743.59	47.46	13.536
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	983.85	106.36	38.786
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	743.59	47.46	13.536

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5400	543.71	-0.72	6.414
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6101	983.85	106.36	37.892
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.2839	983.85	106.36	21.486
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	983.85	106.36	38.786
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	983.85	106.36	38.786
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	983.85	106.36	38.786
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	488.91	-13.79	4.711
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	488.91	-13.79	4.711
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	488.91	-13.79	4.711
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	488.91	-13.79	4.711

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1731.66	0.9995	0.0230	0.18715	0.01110

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.124	0.9801	1.0000	0.9800	613.40	0.414	586.1	419.8
Byp_Nozz	1.599	0.9800	1.0000	0.9800	2006.86	0.847	841.9	5820.6

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**********************************************************************************************************************************
Date:07/05/13    Time:10:03:02    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 474.82    Stator 1 exit: 481.90    Stator 2 inlet: 490.79    Stator 2 exit: 495.33
            Stator 3 inlet: 504.50    Stator 3 exit: 508.60    Stator 4 inlet: 517.19    Stator 4 exit: 520.66
            Stator 5 inlet: 527.70    Stator 5 exit: 530.72            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         2.63
Fan Bypass Relative Humidity       1.95
LPC Inlet Relative Humidity        1.76
LPC Exit Relative Humidity         0.19
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          722.68    Fan/LPC Inlet Flow Velocity        183.20
Ambient Static Pressure          3.09    Fan/LPC Inlet Static Pressure        4.25
Ambient Static Temperature     425.97    Fan/LPC Inlet Static Temperature   466.71
Additional Water at LPC Exit   0.0000124
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.714	37357.0	36.00	251.85	620.0	1.1044	684.74	8.7044	722.68	9.102	0.772	10.000	1720.8	1627.0	1134.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	251.85	4.339	469.50	-18.42	0.0000	811.52	3.088	425.97	2564.4	0.7140	1.40075	0.0000786	251.83	0.020	0.0001
FS1	Inlet.Fl_O	251.85	4.339	469.50	-18.42	0.0000	811.52	3.980	458.03	4168.2	0.3535	1.40075	0.0000786	251.83	0.020	0.0001
FS12	Splitter.Fl_02	225.90	4.337	469.50	-18.42	0.0000	728.26	3.929	456.41	3531.8	0.3784	1.40075	0.0000786	225.88	0.018	0.0001
FS2	Splitter.Fl_01	25.95	4.337	469.50	-18.42	0.0000	83.67	4.247	466.71	830.5	0.1729	1.40075	0.0000786	25.95	0.002	0.0001
FS14	Fan.Fl_O	225.90	4.852	486.44	-14.36	0.0000	662.58	4.105	463.71	2606.7	0.4946	1.40060	0.0000786	225.88	0.018	0.0001
FS23	LPC.Fl_O	25.95	6.568	539.83	-1.56	0.0000	59.24	6.285	533.09	412.6	0.2514	1.39992	0.0000786	25.95	0.002	0.0001
FS24	VaporIN.Fl_O	25.95	6.568	539.88	-1.62	0.0000	59.25	6.285	533.13	412.6	0.2515	1.39991	0.0000910	25.95	0.002	0.0001
FS25	Bleed2.Fl_O	23.36	6.568	539.88	-1.62	0.0000	53.32	6.341	534.48	412.6	0.2246	1.39991	0.0000910	23.36	0.002	0.0001
FS3	HPC.Fl_O	22.22	39.498	975.76	104.37	0.0000	11.34	34.790	942.05	49.7	0.4320	1.38219	0.0000910	22.22	0.002	0.0001
FS36	Bleed3.Fl_O	17.22	39.498	975.76	104.37	0.0000	8.79	36.794	956.80	49.3	0.3217	1.38219	0.0000910	17.22	0.002	0.0001
FS4	Burner.Fl_O	17.41	38.588	1720.81	91.75	0.0110	12.08	36.439	1696.40	74.6	0.2943	1.33136	0.0000910	17.22	0.002	0.0136
FS45	HPT.Fl_O	23.27	9.422	1139.03	-10.81	0.0082	53.79	8.567	1110.28	265.4	0.3755	1.36616	0.0000910	23.08	0.002	0.0102
FS49	LPT.Fl_O	23.55	3.451	906.72	-67.63	0.0081	132.59	3.278	893.97	860.2	0.2735	1.38083	0.0000910	23.36	0.002	0.0101
FS5	TEGV.Fl_O	23.55	3.451	906.79	-67.63	0.0081	132.59	3.278	894.04	860.2	0.2735	1.38082	0.0000910	23.36	0.002	0.0101
FS8	Core_Nozz.Fl_O	23.55	3.451	906.87	-67.63	0.0081	132.60	3.088	879.50	613.4	0.4037	1.38082	0.0000910	23.36	0.002	0.0101
FS17	FanDuctLkg.Fl_O	225.90	4.852	486.44	-14.36	0.0000	662.58	4.105	463.71	2606.7	0.4946	1.40060	0.0000786	225.88	0.018	0.0001
FS171	Bleed15.Fl_O	228.49	4.852	487.05	-14.22	0.0000	670.61	3.978	460.16	2481.9	0.5401	1.40060	0.0000788	228.47	0.018	0.0001
FS172	FanDuct.Fl_O	228.49	4.852	487.05	-14.22	0.0000	670.61	3.978	460.16	2481.9	0.5401	1.40060	0.0000788	228.47	0.018	0.0001
FS173	Byp_Nozz.Fl_O	228.49	4.852	487.05	-14.22	0.0000	670.61	3.088	427.99	2006.9	0.8297	1.40060	0.0000788	228.47	0.018	0.0001

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	728.26	1.119	0.9043	2477.354	1.0361	0.9058	-1297.7	2587.07	54.62
LPC	83.67	1.514	0.8409	2477.354	1.1498	0.8499	-619.3	6.69	3.27
HPC	53.32	6.014	0.8173	8935.941	1.8074	0.8561	-3417.7	61.36	57.96
HPT	12.08	4.095	0.8753	219.774	1.3603	0.8532	3417.7		
LPT	53.79	2.730	0.8478	69.838	1.2542	0.8286	1916.9		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	846.16	1.116	0.9061	2453.732	0.0413	0.8607	1.0235	0.9980	0.9905
LPC	69.97	1.481	0.7756	0.654	0.0000	1.1956	1.0683	1.0841	0.0003
HPC	48.50	5.778	0.8258	8697.714	10.9846	1.0995	1.0494	0.9898	0.9733
HPT	0.96	4.010	0.8753	1.321	4.0096	12.6299	0.9723	1.0000	0.0003
LPT	0.82	2.302	0.8541	0.786	2.3015	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2564.42	5656.9

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2735	860.21
FanDuct	0.0000	0.5401	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.7044	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9116.8	1968.9	3417.7
LP_Shaft	2357.0	4271.5	1916.9

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.8595	759.62	51.38	9.422
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2733	759.62	51.38	3.451
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	737.78	46.08	13.812
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	872.59	78.94	26.984
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	737.78	46.08	13.812
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	975.76	104.37	39.498
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	737.78	46.08	13.812

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.5952	539.88	-1.62	6.568
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.6669	975.76	104.37	38.588
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.3336	975.76	104.37	21.905
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	975.76	104.37	39.498
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	975.76	104.37	39.498
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	975.76	104.37	39.498
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	486.44	-14.36	4.852
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	486.44	-14.36	4.852
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	486.44	-14.36	4.852
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	486.44	-14.36	4.852

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1720.76	0.9995	0.0230	0.19021	0.01104

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.117	0.9801	1.0000	0.9800	613.40	0.404	571.6	418.3
Byp_Nozz	1.571	0.9800	1.0000	0.9800	2006.86	0.830	825.0	5858.7

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**********************************************************************************************************************************
Date:07/05/13    Time:10:03:18    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 11/ 25/ 1/ 9    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 476.22    Stator 1 exit: 482.85    Stator 2 inlet: 491.16    Stator 2 exit: 495.38
            Stator 3 inlet: 503.94    Stator 3 exit: 507.74    Stator 4 inlet: 515.74    Stator 4 exit: 518.95
            Stator 5 inlet: 525.50    Stator 5 exit: 528.27            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         3.24
Fan Bypass Relative Humidity       2.48
LPC Inlet Relative Humidity        2.22
LPC Exit Relative Humidity         0.28
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          682.24    Fan/LPC Inlet Flow Velocity        176.64
Ambient Static Pressure          3.58    Fan/LPC Inlet Static Pressure        4.74
Ambient Static Temperature     432.42    Fan/LPC Inlet Static Temperature   468.61
Additional Water at LPC Exit   0.0000139

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.669   34281.0    36.00    272.65      666.7    1.0955     730.36    8.8119    682.24     8.726     0.795         10.000    1710.2   1616.6   1130.0


                                        FLOW STATION DATA
                                  W        Pt        Tt        ht       FAR        Wc        Ps        Ts      Aphy      MN      gamt         WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O           272.65     4.831    471.21    -18.12    0.0000    790.56     3.578    432.42    2576.9  0.6690   1.40074   0.0000968    272.62    0.026    0.0001
FS1   Inlet.Fl_O             272.65     4.831    471.21    -18.12    0.0000    790.56     4.453    460.37    4168.2  0.3429   1.40074   0.0000968    272.62    0.026    0.0001
FS12  Splitter.Fl_02         244.86     4.829    471.21    -18.12    0.0000    710.34     4.399    458.81    3531.8  0.3673   1.40074   0.0000968    244.84    0.024    0.0001
FS2   Splitter.Fl_01          27.79     4.829    471.21    -18.12    0.0000     80.61     4.736    468.61     830.5  0.1664   1.40074   0.0000968     27.79    0.003    0.0001
FS14  Fan.Fl_O               244.86     5.360    487.02    -14.33    0.0000    650.61     4.570    465.32    2606.7  0.4824   1.40059   0.0000968    244.84    0.024    0.0001
FS23  LPC.Fl_O                27.79     7.120    536.97     -2.35    0.0000     58.36     6.823    530.48     412.6  0.2474   1.39996   0.0000968     27.79    0.003    0.0001
FS24  VaporIN.Fl_O            27.79     7.120    537.03     -2.41    0.0000     58.36     6.823    530.53     412.6  0.2474   1.39996   0.0001107     27.79    0.003    0.0001
FS25  Bleed2.Fl_O             25.01     7.120    537.03     -2.41    0.0000     52.53     6.882    531.83     412.6  0.2210   1.39996   0.0001107     25.01    0.003    0.0001
FS3   HPC.Fl_O                23.80    42.157    966.86    102.06    0.0000     11.33    37.149    933.55      49.7  0.4311   1.38272   0.0001107     23.79    0.003    0.0001
FS36  Bleed3.Fl_O             18.44    42.157    966.86    102.06    0.0000      8.78    39.280    948.11      49.3  0.3212   1.38272   0.0001107     18.44    0.002    0.0001
FS4   Burner.Fl_O             18.64    41.186   1710.22     89.51    0.0110     12.08    38.892   1685.93      74.6  0.2943   1.33188   0.0001107     18.44    0.002    0.0135
FS45  HPT.Fl_O                24.92    10.173   1134.22    -11.56    0.0082     53.24     9.270   1106.26     265.4  0.3708   1.36649   0.0001107     24.71    0.003    0.0102
FS49  LPT.Fl_O                25.21     3.939    915.29    -65.03    0.0081    124.94     3.766    903.97     860.2  0.2564   1.38034   0.0001107     25.01    0.003    0.0100
FS5   TEGV.Fl_O               25.21     3.939    915.36    -65.03    0.0081    124.95     3.766    904.05     860.2  0.2564   1.38034   0.0001107     25.01    0.003    0.0100
FS8   Core_Nozz.Fl_O          25.21     3.939    915.43    -65.03    0.0081    124.95     3.578    891.44     613.4  0.3757   1.38033   0.0001107     25.01    0.003    0.0101
FS17  FanDuctLkg.Fl_O        244.86     5.360    487.02    -14.33    0.0000    650.61     4.570    465.32    2606.7  0.4824   1.40059   0.0000968    244.84    0.024    0.0001
FS171 Bleed15.Fl_O           247.64     5.360    487.58    -14.19    0.0000    658.37     4.439    462.01    2481.9  0.5256   1.40059   0.0000970    247.62    0.024    0.0001
FS172 FanDuct.Fl_O           247.64     5.360    487.58    -14.19    0.0000    658.37     4.439    462.01    2481.9  0.5256   1.40059   0.0000970    247.62    0.024    0.0001
FS173 Byp_Nozz.Fl_O          247.64     5.360    487.58    -14.19    0.0000    658.37     3.578    434.35    2006.9  0.7820   1.40059   0.0000970    247.62    0.024    0.0001

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff        Nc        TR    efPoly       pwr       SMN      SMW
Fan       710.34   1.110    0.9031  2395.014    1.0335    0.9045   -1312.5   5854.87    54.21
LPC        80.61   1.475    0.8415  2395.014    1.1396    0.8500    -620.0      6.40     3.05
HPC        52.53   5.921    0.8158  8909.678    1.8004    0.8545   -3607.0     61.79    58.29
HPT        12.08   4.049    0.8746   219.224    1.3570    0.8526    3607.0
LPT        53.24   2.582    0.8427    67.783    1.2370    0.8241    1932.5

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan        825.35   1.107   0.9050  2372.178    0.0413      0.8607    1.0235    0.9980    0.9905
LPC         66.41   1.445   0.7718     0.633    0.0000      1.2139    1.0674    1.0903    0.0003
HPC         47.77   5.689   0.8242  8672.152   10.9687      1.0995    1.0494    0.9898    0.9733
HPT          0.96   3.964   0.8746     1.318    3.9641     12.6299    0.9723    1.0000    0.0003
LPT          0.82   2.190   0.8489     0.762    2.1901     65.2590    0.7521    0.9926    0.0005
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===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2576.93	5781.4
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2564	860.21
FanDuct	0.0000	0.5256	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.8119	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9066.0	2089.6	3607.0
LP_Shaft	2282.8	4446.1	1932.5

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9203	753.67	49.82	10.173
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.2926	753.67	49.82	3.939
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.13	44.60	14.828
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	865.08	76.98	28.843
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.13	44.60	14.828
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	966.86	102.06	42.157
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	732.13	44.60	14.828

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1000	1.0000	1.0000	2.7788	537.03	-2.41	7.120
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	2.8556	966.86	102.06	41.186
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.4987	966.86	102.06	23.446
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	966.86	102.06	42.157
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	966.86	102.06	42.157
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	966.86	102.06	42.157
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	487.02	-14.33	5.360
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	487.02	-14.33	5.360
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	487.02	-14.33	5.360
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	487.02	-14.33	5.360

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1710.15	0.9995	0.0230	0.20288	0.01100

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.101	0.9801	1.0000	0.9800	613.40	0.376	535.4	419.6
Byp_Nozz	1.498	0.9800	1.0000	0.9800	2006.86	0.782	783.2	6028.6

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**********************************************************************************************************************************
Date:07/05/13    Time:10:03:34    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 13/ 27/ 1/11    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 484.50    Stator 1 exit: 490.20    Stator 2 inlet: 497.24    Stator 2 exit: 500.63
            Stator 3 inlet: 507.99    Stator 3 exit: 510.97    Stator 4 inlet: 517.89    Stator 4 exit: 520.35
            Stator 5 inlet: 525.92    Stator 5 exit: 528.01            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         4.18
Fan Bypass Relative Humidity       3.37
LPC Inlet Relative Humidity        3.05
LPC Exit Relative Humidity         0.57
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          630.80    Fan/LPC Inlet Flow Velocity        177.37
Ambient Static Pressure          4.36    Fan/LPC Inlet Static Pressure        5.49
Ambient Static Temperature     447.58    Fan/LPC Inlet Static Temperature   478.12
Additional Water at LPC Exit   0.0000197

                                        SUMMARY OUTPUT DATA
    MN       alt    dTamb         W         Fn      TSFC      Wfuel       BPR      VTAS       OPR       EPR       PowerSet      T4      T41      T49
 0.608   30029.0    36.00    298.11      709.6    1.1115     788.72    8.4102    630.80     8.108     0.827         10.000    1708.1   1614.2   1131.6


                                        FLOW STATION DATA
                                 W        Pt        Tt        ht      FAR        Wc        Ps        Ts      Aphy      MN      gamt        WAR      Wair     WH2O  H2O frac
FS0   Ambient.Fl_O          298.11     5.595    480.74    -16.28   0.0000    753.83     4.358    447.58    2589.5  0.6080   1.40064  0.0001750    298.05    0.052    0.0002
FS1   Inlet.Fl_O            298.11     5.595    480.74    -16.28   0.0000    753.83     5.201    470.80    4168.2  0.3247   1.40064  0.0001750    298.05    0.052    0.0002
FS12  Splitter.Fl_02        266.43     5.592    480.74    -16.28   0.0000    674.06     5.149    469.52    3531.8  0.3454   1.40064  0.0001750    266.38    0.047    0.0002
FS2   Splitter.Fl_01         31.68     5.592    480.74    -16.28   0.0000     80.15     5.486    478.12     830.5  0.1654   1.40064  0.0001750     31.67    0.006    0.0002
FS14  Fan.Fl_O              266.43     6.130    494.93    -12.88   0.0000    623.91     5.315    475.13    2606.7  0.4561   1.40050  0.0001750    266.38    0.047    0.0002
FS23  LPC.Fl_O               31.68     7.803    536.92     -2.81   0.0000     60.70     7.449    529.86     412.6  0.2582   1.39995  0.0001750     31.67    0.006    0.0002
FS24  VaporIN.Fl_O           31.68     7.803    536.98     -2.91   0.0000     60.71     7.449    529.91     412.6  0.2582   1.39995  0.0001947     31.67    0.006    0.0002
FS25  Bleed2.Fl_O            26.93     7.803    536.98     -2.91   0.0000     51.60     7.551    531.97     412.6  0.2169   1.39995  0.0001947     26.92    0.005    0.0002
FS3   HPC.Fl_O               25.62    45.364    962.26    100.44   0.0000     11.31    39.998    929.23      49.7  0.4301   1.38298  0.0001947     25.62    0.005    0.0002
FS36  Bleed3.Fl_O            19.86    45.364    962.26    100.44   0.0000      8.76    42.281    943.67      49.3  0.3205   1.38298  0.0001947     19.85    0.004    0.0002
FS4   Burner.Fl_O            20.08    44.319   1708.12     87.87   0.0110     12.08    41.850   1683.86      74.6  0.2943   1.33194  0.0001947     19.85    0.004    0.0136
FS45  HPT.Fl_O               26.83    11.108   1135.85    -12.08   0.0082     52.53    10.151   1108.71     265.4  0.3650   1.36636  0.0001947     26.61    0.005    0.0103
FS49  LPT.Fl_O               27.15     4.710    937.20    -60.49   0.0081    113.86     4.539    927.72     860.2  0.2322   1.37901  0.0001947     26.92    0.005    0.0102
FS5   TEGV.Fl_O              27.15     4.710    937.28    -60.49   0.0081    113.86     4.539    927.79     860.2  0.2322   1.37900  0.0001947     26.92    0.005    0.0102
FS8   Core_Nozz.Fl_O         27.15     4.710    937.35    -60.49   0.0081    113.87     4.358    917.55     613.4  0.3371   1.37900  0.0001947     26.92    0.005    0.0102
FS17  FanDuctLkg.Fl_O        266.43     6.130    494.93    -12.88   0.0000    623.91     5.315    475.13    2606.7  0.4561   1.40050  0.0001750    266.38    0.047    0.0002
FS171 Bleed15.Fl_O           271.18     6.130    495.67    -12.71   0.0000    635.51     5.168    472.05    2481.9  0.4998   1.40049  0.0001753    271.13    0.048    0.0002
FS172 FanDuct.Fl_O           271.18     6.130    495.67    -12.71   0.0000    635.51     5.168    472.05    2481.9  0.4998   1.40049  0.0001753    271.13    0.048    0.0002
FS173 Byp_Nozz.Fl_O          271.18     6.130    495.67    -12.71   0.0000    635.51     4.358    449.58    2006.9  0.7153   1.40049  0.0001753    271.13    0.048    0.0002

TURBOMACHINERY PERFORMANCE DATA
              Wc      PR       eff        Nc       TR    efPoly        pwr       SMN      SMW
Fan       674.06   1.096    0.9014  2238.852   1.0295    0.9027   -1282.9  -8363.19    52.80
LPC        80.15   1.395    0.8549  2238.852   1.1169    0.8616    -604.0      5.98     2.60
HPC        51.60   5.814    0.8138  8879.345   1.7920    0.8527   -3842.0     62.28    58.66
HPT        12.08   3.990    0.8743   218.602   1.3526    0.8525    3842.0
LPT        52.53   2.358    0.8336    63.955   1.2095    0.8162    1886.8

TURBOMACHINERY MAP DATA
            WcMap   PRmap   effMap      NcMap    R/Parm     s_WcDes   s_PRdes  s_effDes   s_NcDes
Fan        783.19   1.094   0.9032  2217.505    0.0416      0.8607    1.0235    0.9980    0.9905
LPC         59.97   1.378   0.7652     0.591    0.0000      1.3365    1.0452    1.1172    0.0003
HPC         46.93   5.587   0.8222  8642.628   10.9509      1.0995    1.0494    0.9898    0.9733
HPT          0.96   3.907   0.8743     1.314    3.9070     12.6299    0.9723    1.0000    0.0003
LPT          0.80   2.022   0.8398     0.719    2.0217     65.2590    0.7521    0.9926    0.0005
```

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2589.51	5844.6
====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2322	860.21
FanDuct	0.0000	0.4998	2481.93
==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	8.4102	0.0005	0.0005
===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	9034.7	2233.5	3842.0
LP_Shaft	2155.4	4597.7	1886.8

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	0.9909	751.30	48.77	11.108
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3151	751.30	48.77	4.710
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	729.99	43.60	16.066
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	861.54	75.64	31.091
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	729.99	43.60	16.066
WBLKG	HPC.l>	0.0000	1.0000	1.0000	0.0000	962.26	100.44	45.364
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	729.99	43.60	16.066

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.1500	1.0000	1.0000	4.7519	536.98	-2.91	7.803
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.0746	962.26	100.44	44.319
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.6903	962.26	100.44	25.322
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	962.26	100.44	45.364
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	962.26	100.44	45.364
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	962.26	100.44	45.364
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	494.93	-12.88	6.130
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	494.93	-12.88	6.130
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	494.93	-12.88	6.130
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	494.93	-12.88	6.130

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1708.06	0.9995	0.0230	0.21909	0.01104

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.081	0.9801	1.0000	0.9800	613.40	0.337	487.2	411.0
Byp_Nozz	1.407	0.9800	1.0000	0.9800	2006.86	0.715	728.9	6143.2

```
**********************************************************************************************************************************
Date:07/05/13    Time:10:04:05    Model:                                    Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 23/ 51/ 2/20    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 492.28    Stator 1 exit: 496.44    Stator 2 inlet: 501.16    Stator 2 exit: 503.02
            Stator 3 inlet: 508.27    Stator 3 exit: 509.71    Stator 4 inlet: 514.75    Stator 4 exit: 515.78
            Stator 5 inlet: 519.46    Stator 5 exit: 520.21            Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         5.01
Fan Bypass Relative Humidity       4.21
LPC Inlet Relative Humidity        4.03
LPC Exit Relative Humidity         1.37
HPC Relative Humidity              0.00
Drop Diameter                0.0001000    Inlet Length                        40.00
Ambient Flow Velocity          582.56    Fan/LPC Inlet Flow Velocity        195.59
Ambient Static Pressure          5.30    Fan/LPC Inlet Static Pressure        6.37
Ambient Static Temperature     463.14    Fan/LPC Inlet Static Temperature   488.23
Additional Water at LPC Exit   0.0000233
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.552	25666.0	36.00	322.27	709.8	1.1734	832.84	7.1190	582.56	7.194	0.857	10.000	1712.9	1616.9	1139.7

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	322.27	6.516	491.41	-14.47	0.0000	707.46	5.297	463.14	2581.0	0.5520	1.40052	0.0003043	322.17	0.098	0.0003
FS1	Inlet.Fl_O	322.27	6.516	491.41	-14.47	0.0000	707.46	6.116	482.59	4168.2	0.3022	1.40052	0.0003043	322.17	0.098	0.0003
FS12	Splitter.Fl_02	282.57	6.513	491.41	-14.47	0.0000	620.64	6.082	481.88	3531.8	0.3143	1.40052	0.0003043	282.49	0.086	0.0003
FS2	Splitter.Fl_01	39.69	6.513	491.41	-14.47	0.0000	87.18	6.366	488.23	830.5	0.1805	1.40052	0.0003043	39.68	0.012	0.0003
FS14	Fan.Fl_O	282.57	7.039	503.65	-11.54	0.0000	581.38	6.246	486.72	2606.7	0.4167	1.40039	0.0003043	282.49	0.086	0.0003
FS23	LPC.Fl_O	39.69	8.180	531.59	-4.83	0.0000	72.19	7.644	521.39	412.6	0.3127	1.40001	0.0003043	39.68	0.012	0.0003
FS24	VaporIN.Fl_O	39.69	8.180	531.66	-4.95	0.0000	72.20	7.644	521.45	412.6	0.3128	1.40001	0.0003276	39.68	0.013	0.0003
FS25	Bleed2.Fl_O	27.79	8.180	531.66	-4.95	0.0000	50.54	7.927	526.91	412.6	0.2122	1.40001	0.0003276	27.78	0.009	0.0003
FS3	HPC.Fl_O	26.44	46.874	949.54	96.54	0.0000	11.22	41.433	917.55	49.7	0.4257	1.38371	0.0003276	26.43	0.009	0.0003
FS36	Bleed3.Fl_O	20.49	46.874	949.54	96.54	0.0000	8.69	43.743	931.50	49.3	0.3175	1.38371	0.0003276	20.48	0.007	0.0003
FS4	Burner.Fl_O	20.72	45.795	1712.91	83.72	0.0113	12.08	43.242	1688.59	74.6	0.2944	1.33152	0.0003276	20.48	0.007	0.0141
FS45	HPT.Fl_O	27.69	11.865	1144.17	-14.29	0.0084	50.94	10.911	1118.73	265.4	0.3522	1.36567	0.0003276	27.45	0.009	0.0106
FS49	LPT.Fl_O	28.02	5.615	969.12	-56.84	0.0083	100.23	5.459	961.64	860.2	0.2030	1.37693	0.0003276	27.78	0.009	0.0105
FS5	TEGV.Fl_O	28.02	5.615	969.19	-56.84	0.0083	100.24	5.459	961.71	860.2	0.2030	1.37692	0.0003276	27.78	0.009	0.0105
FS8	Core_Nozz.Fl_O	28.02	5.615	969.26	-56.84	0.0083	100.24	5.297	953.89	613.4	0.2922	1.37692	0.0003276	27.78	0.009	0.0105
FS17	FanDuctLkg.Fl_O	282.57	7.039	503.65	-11.54	0.0000	581.38	6.246	486.72	2606.7	0.4167	1.40039	0.0003043	282.49	0.086	0.0003
FS171	Bleed15.Fl_O	294.48	7.039	504.78	-11.27	0.0000	606.56	6.054	483.49	2481.9	0.4690	1.40037	0.0003053	294.39	0.090	0.0003
FS172	FanDuct.Fl_O	294.48	7.039	504.78	-11.27	0.0000	606.56	6.054	483.49	2481.9	0.4690	1.40037	0.0003053	294.39	0.090	0.0003
FS173	Byp_Nozz.Fl_O	294.48	7.039	504.78	-11.27	0.0000	606.56	5.297	465.36	2006.9	0.6503	1.40037	0.0003053	294.39	0.090	0.0003

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	620.64	1.081	0.9017	2025.350	1.0249	0.9027	-1172.9	-2596.18	50.01
LPC	87.18	1.256	0.8233	2025.350	1.0818	0.8289	-541.3	6.43	2.41
HPC	50.54	5.730	0.8121	8845.465	1.7860	0.8511	-3893.2	61.73	58.01
HPT	12.08	3.860	0.8752	216.383	1.3429	0.8541	3893.2		
LPT	50.94	2.113	0.8233	58.282	1.1777	0.8074	1714.2		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	721.12	1.079	0.9035	2006.039	0.0424	0.8607	1.0235	0.9980	0.9905
LPC	52.83	1.304	0.7603	0.535	0.0000	1.6504	0.8407	1.0829	0.0003
HPC	45.97	5.507	0.8205	8609.651	10.9984	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.780	0.8752	1.300	3.7803	12.6299	0.9723	1.0000	0.0003
LPT	0.78	1.837	0.8294	0.656	1.8372	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2580.98	5835.2

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.2030	860.21
FanDuct	0.0000	0.4690	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	7.1190	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8955.5	2283.2	3893.2
LP_Shaft	1971.4	4566.9	1714.2

BLEEDS - interstg		Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC	HPC.C>	0.0368	0.5000	0.2200	1.0225	742.18	45.79	11.865
LPT_COOLA	HPC.C>	0.0117	0.5000	0.4500	0.3251	742.18	45.79	5.615
WB2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	721.24	40.72	16.693
WB2Y	HPC.B>	0.0000	0.7600	0.6200	0.0000	850.52	72.18	32.170
WBA2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	721.24	40.72	16.693
WBLKG	HPC.1>	0.0000	1.0000	1.0000	0.0000	949.54	96.54	46.874
WBW2X	HPC.B>	0.0000	0.4500	0.2200	0.0000	721.24	40.72	16.693

BLEEDS - output		Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y	Bleed>	0.3000	1.0000	1.0000	11.9082	531.66	-4.95	8.180
HPT_COOLA	Bleed>	0.1142	1.0000	1.0000	3.1726	949.54	96.54	45.795
HPT_COOLB	Bleed>	0.0999	1.0000	1.0000	2.7761	949.54	96.54	26.387
WB3X	Bleed>	0.0000	1.0000	1.0000	0.0000	949.54	96.54	46.874
WBA3X	Bleed>	0.0000	1.0000	1.0000	0.0000	949.54	96.54	46.874
WBW3X	Bleed>	0.0000	1.0000	1.0000	0.0000	949.54	96.54	46.874
WBFDLKG	FanDu>	0.0000	1.0000	1.0000	0.0000	503.65	-11.54	7.039
WB15X	Bleed>	0.0000	1.0000	1.0000	0.0000	503.65	-11.54	7.039
WB15Y	Bleed>	0.0000	1.0000	1.0000	0.0000	503.65	-11.54	7.039
WB17X	Bleed>	0.0000	1.0000	1.0000	0.0000	503.65	-11.54	7.039

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1712.85	0.9995	0.0230	0.23134	0.01129

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.060	0.9801	1.0000	0.9800	613.40	0.292	430.1	374.5
Byp_Nozz	1.329	0.9800	1.0000	0.9800	2006.86	0.650	674.2	6170.4

```
************************************************************************************************************************************
Date:07/05/13    Time:10:04:28    Model:                                  Turbofan Engine -  COMDES ON    converge = 1   CASE:   0
Version:NPSS_1.6.5 - Rev: ->    Gas Package: Janaf    iter/pass/Jacb/Broy= 27/ 41/ 1/25    Run by: Philip C Jorgenson      PC:    10
Temperature Stator 1 inlet: 505.22    Stator 1 exit: 508.18    Stator 2 inlet: 510.96    Stator 2 exit: 511.75
            Stator 3 inlet: 515.11    Stator 3 exit: 515.47    Stator 4 inlet: 518.74    Stator 4 exit: 518.80
            Stator 5 inlet: 520.69    Stator 5 exit: 520.56             Unblocked   Percent Blockage: 0.00

Ambient Relative Humidity         10.00
Fan Face Relative Humidity         6.01
Fan Bypass Relative Humidity       5.19
LPC Inlet Relative Humidity        5.20
LPC Exit Relative Humidity         2.84
HPC Relative Humidity              0.01
Drop Diameter                  0.0001000    Inlet Length                        40.00
Ambient Flow Velocity             528.20    Fan/LPC Inlet Flow Velocity        203.17
Ambient Static Pressure             6.74    Fan/LPC Inlet Static Pressure        7.75
Ambient Static Temperature        483.18    Fan/LPC Inlet Static Temperature   502.97
Additional Water at LPC Exit     0.0000304
```

SUMMARY OUTPUT DATA

MN	alt	dTamb	W	Fn	TSFC	Wfuel	BPR	VTAS	OPR	EPR	PowerSet	T4	T41	T49
0.490	20047.0	36.00	357.70	762.3	1.1971	912.54	6.3407	528.20	6.254	0.888	10.000	1736.5	1637.1	1165.8

FLOW STATION DATA

		W	Pt	Tt	ht	FAR	Wc	Ps	Ts	Aphy	MN	gamt	WAR	Wair	WH2O	H2O frac
FS0	Ambient.Fl_O	357.70	7.943	506.41	-12.46	0.0000	653.92	6.740	483.18	2590.9	0.4900	1.40031	0.0005787	357.49	0.207	0.0006
FS1	Inlet.Fl_O	357.70	7.943	506.41	-12.46	0.0000	653.92	7.531	498.75	4168.2	0.2770	1.40031	0.0005787	357.49	0.207	0.0006
FS12	Splitter.Fl_02	308.97	7.939	506.41	-12.46	0.0000	565.13	7.509	498.41	3531.8	0.2831	1.40031	0.0005787	308.79	0.179	0.0006
FS2	Splitter.Fl_01	48.73	7.939	506.41	-12.46	0.0000	89.13	7.752	502.97	830.5	0.1847	1.40031	0.0005787	48.70	0.028	0.0006
FS14	Fan.Fl_O	308.97	8.480	517.06	-9.90	0.0000	534.64	7.690	502.82	2606.7	0.3761	1.40018	0.0005787	308.79	0.179	0.0006
FS23	LPC.Fl_O	48.73	9.053	534.25	-5.78	0.0000	80.28	8.304	521.24	412.6	0.3534	1.39993	0.0005787	48.70	0.028	0.0006
FS24	VaporIN.Fl_O	48.73	9.053	534.33	-5.94	0.0000	80.29	8.304	521.30	412.6	0.3534	1.39993	0.0006090	48.70	0.030	0.0006
FS25	Bleed2.Fl_O	29.24	9.053	534.33	-5.94	0.0000	48.17	8.800	530.01	412.6	0.2018	1.39993	0.0006090	29.22	0.018	0.0006
FS3	HPC.Fl_O	27.82	49.677	943.46	93.44	0.0000	11.10	44.047	912.44	49.7	0.4202	1.38403	0.0006090	27.80	0.017	0.0006
FS36	Bleed3.Fl_O	21.56	49.677	943.46	93.44	0.0000	8.60	46.432	925.92	49.3	0.3138	1.38403	0.0006090	21.55	0.013	0.0006
FS4	Burner.Fl_O	21.81	48.533	1736.55	80.13	0.0118	12.09	45.826	1711.94	74.6	0.2947	1.33006	0.0006090	21.55	0.013	0.0149
FS45	HPT.Fl_O	29.15	13.281	1170.56	-15.61	0.0088	48.45	12.324	1147.41	265.4	0.3327	1.36370	0.0006090	28.88	0.018	0.0113
FS49	LPT.Fl_O	29.49	7.031	1017.45	-52.74	0.0087	86.34	6.886	1011.73	860.2	0.1740	1.37363	0.0006090	29.22	0.018	0.0112
FS5	TEGV.Fl_O	29.49	7.031	1017.52	-52.73	0.0087	86.34	6.886	1011.80	860.2	0.1740	1.37362	0.0006090	29.22	0.018	0.0112
FS8	Core_Nozz.Fl_O	29.49	7.031	1017.59	-52.73	0.0087	86.34	6.740	1005.97	613.4	0.2485	1.37362	0.0006090	29.22	0.018	0.0112
FS17	FanDuctLkg.Fl_O	308.97	8.480	517.06	-9.90	0.0000	534.64	7.690	502.82	2606.7	0.3761	1.40018	0.0005787	308.79	0.179	0.0006
FS171	Bleed15.Fl_O	328.46	8.480	518.08	-9.67	0.0000	568.93	7.461	499.47	2481.9	0.4314	1.40016	0.0005805	328.27	0.191	0.0006
FS172	FanDuct.Fl_O	328.46	8.480	518.08	-9.67	0.0000	568.93	7.461	499.47	2481.9	0.4314	1.40016	0.0005805	328.27	0.191	0.0006
FS173	Byp_Nozz.Fl_O	328.46	8.480	518.08	-9.67	0.0000	568.93	6.740	485.17	2006.9	0.5821	1.40016	0.0005805	328.27	0.191	0.0006

TURBOMACHINERY PERFORMANCE DATA

	Wc	PR	eff	Nc	TR	efPoly	pwr	SMN	SMW
Fan	565.13	1.068	0.9035	1815.354	1.0210	0.9044	-1117.1	-1833.16	46.56
LPC	89.13	1.140	0.6953	1815.354	1.0550	0.7009	-460.7	7.12	2.04
HPC	48.17	5.487	0.8076	8765.201	1.7657	0.8467	-4011.0	62.14	58.11
HPT	12.09	3.654	0.8765	213.490	1.3265	0.8566	4011.0		
LPT	48.45	1.889	0.8151	52.429	1.1472	0.8013	1577.8		

TURBOMACHINERY MAP DATA

	WcMap	PRmap	effMap	NcMap	R/Parm	s_WcDes	s_PRdes	s_effDes	s_NcDes
Fan	656.62	1.067	0.9053	1798.045	0.0437	0.8607	1.0235	0.9980	0.9905
LPC	46.01	1.238	0.7547	0.479	0.0000	1.9370	0.5887	0.9213	0.0003
HPC	43.81	5.276	0.8160	8531.527	11.0083	1.0995	1.0494	0.9898	0.9733
HPT	0.96	3.581	0.8765	1.283	3.5806	12.6299	0.9723	1.0000	0.0003
LPT	0.74	1.669	0.8212	0.590	1.6687	65.2590	0.7521	0.9926	0.0005

===INLETS====	eRam	Afs	Fram
Inlet	1.0000	2590.89	5872.3

====DUCTS====	dPnorm	MN	Aphy
TEGV	0.0000	0.1740	860.21
FanDuct	0.0000	0.4314	2481.93

==SPLITTERS==	BPR	dP/P 1	dP/P 2
Splitter	6.3407	0.0005	0.0005

===SHAFTS====	Nmech	trq in	pwr in
HP_Shaft	8896.5	2367.9	4011.0
LP_Shaft	1793.8	4619.9	1577.8

BLEEDS - interstg	Wb/Win	BldWk	BldP	W	Tt	ht	Pt
HPT_COOLC HPC.C>	0.0368	0.5000	0.2200	1.0759	740.40	43.75	13.281
LPT_COOLA HPC.C>	0.0117	0.5000	0.4500	0.3421	740.40	43.75	7.031
WB2X HPC.B>	0.0000	0.4500	0.2200	0.0000	719.90	38.78	17.990
WB2Y HPC.B>	0.0000	0.7600	0.6200	0.0000	846.48	69.59	34.240
WBA2X HPC.B>	0.0000	0.4500	0.2200	0.0000	719.90	38.78	17.990
WBLKG HPC.l>	0.0000	1.0000	1.0000	0.0000	943.46	93.44	49.677
WBW2X HPC.B>	0.0000	0.4500	0.2200	0.0000	719.90	38.78	17.990

BLEEDS - output	Wb/Win	hscale	Pscale	W	Tt	ht	Pt
WB17Y Bleed>	0.4000	1.0000	1.0000	19.4917	534.33	-5.94	9.053
HPT_COOLA Bleed>	0.1142	1.0000	1.0000	3.3383	943.46	93.44	48.533
HPT_COOLB Bleed>	0.0999	1.0000	1.0000	2.9211	943.46	93.44	28.369
WB3X Bleed>	0.0000	1.0000	1.0000	0.0000	943.46	93.44	49.677
WBA3X Bleed>	0.0000	1.0000	1.0000	0.0000	943.46	93.44	49.677
WBW3X Bleed>	0.0000	1.0000	1.0000	0.0000	943.46	93.44	49.677
WBFDLKG FanDu>	0.0000	1.0000	1.0000	0.0000	517.06	-9.90	8.480
WB15X Bleed>	0.0000	1.0000	1.0000	0.0000	517.06	-9.90	8.480
WB15Y Bleed>	0.0000	1.0000	1.0000	0.0000	517.06	-9.90	8.480
WB17X Bleed>	0.0000	1.0000	1.0000	0.0000	517.06	-9.90	8.480

===BURNERS===	TtOut	eff	dPnorm	Wfuel	FAR
Burner	1736.49	0.9995	0.0230	0.25348	0.01176

===NOZZLES===	PR	Cfg	CdTh	Cv	Ath	MNth	Vact	Fg
Core_Nozz	1.043	0.9801	1.0000	0.9800	613.40	0.249	375.3	344.0
Byp_Nozz	1.258	0.9800	1.0000	0.9800	2006.86	0.582	616.2	6290.6

Appendix O: Compressor code analysis for the descent conditions

10µm, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 10% 39000 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.240   EfDer =  0.956    SH =  0.214612E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     26.744    2408.660       4.265     457.732       1.000       1.000       0.980
  W Kg/sec =  12.156  Wdry =  26.738  WH2O = 0.006  lbm/sec   H2O =   0.085g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     86.597    2564.035       1.381       0.248      53.355      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64855.586   20982.740       3.280     831.557     253.504     619.754       2.445

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   187.18    -0.06   187.18     0.18     0.45   461.59
 MEAN    17.06     0.00    -0.02   187.18    -0.06   187.18     0.18     0.39
 HUB     12.51     0.00    -0.02   187.18    -0.06   187.18     0.18     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.66    50.47    16.19   433.63   472.37     4.17   454.91   448.87     8.21
 MEAN    62.44    47.20    15.24   358.60   404.57     4.17   454.91   448.87     8.21
 HUB     54.56    38.62    15.94   262.95   322.83     4.17   454.91   448.87     8.21

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   389.28   297.92   250.56  1051.54     0.37     7.29     6.52    16.04
 MEAN    18.04   394.34   301.76   253.85  1048.49     0.38     7.43     6.80    12.53
 HUB     15.00   427.66   340.75   258.42  1044.73     0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    433.63   284.96   135.71     0.27  6147.47     0.92     0.88
 MEAN   379.11   265.38    77.35     0.25  5443.65     0.92     0.88     0.88     1.75
 HUB    315.29   259.67    25.46     0.25  5112.08     0.92     0.88

         Pt2       PR       Ps2     Tt2       TR       Ts2     TwetBulb2   RH
 TIP      4.91     1.15      4.47   478.51     1.05   466.32   463.43     7.41
 MEAN     4.83     1.13      4.39   476.13     1.04   463.63   461.98     8.22
 HUB      4.80     1.12      4.28   475.01     1.04   460.31   461.41     9.36

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.93    28.44    24.20     4.24     0.93     0.57     1.80
 MEAN    49.93    16.95    12.70     4.25     0.95     0.52     2.22
 HUB     52.82    -5.63    -9.30     3.67     0.95     0.38     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.956       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   406.0086   301.1738   272.2817  1048.1010     0.3874    -0.0366     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.8427     4.3724   463.3001   462.3284     8.6491    47.8843    35.4000   -12.4843

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   270.2627    66.1145   262.0512  1056.4054     0.2558     0.5100     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.8312     4.6189   470.6782   461.9947   554.9116     0.0348     0.6023
```

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
18.0829	269.1270	0.0000	269.1270	1056.4429	0.2547	0.4815	1.3089

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.5988	470.7275	462.1384	0.0000	0.0600	0.0839	0.4669

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8187	4.8083	1.1275	476.5477	18.8174	169.0224	1.3103

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
117078.594	0.623	176.943	280533.250	0.389583E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =14.778 EfDer = 0.960 SH = 0.595457E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.744	2408.660	4.808	476.548	1.000	1.000	0.980

W Kg/sec = 12.156 Wdry = 26.728 WH2O = 0.016 lbm/sec H2O = 0.253g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.369	2512.930	1.381	0.249	53.368	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60548.652	20979.604	2.573	590.487	229.471	468.502	2.042

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	246.09	-0.08	246.09	0.23	0.47	450.64
MEAN	18.08	0.00	-0.02	246.09	-0.08	246.09	0.23	0.43	
HUB	15.21	0.00	-0.02	246.09	-0.08	246.09	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.33	46.36	13.97	431.95	497.21	4.63	471.68	462.80	11.67
MEAN	57.08	42.30	14.78	380.00	452.79	4.63	471.68	462.80	11.67
HUB	52.42	37.84	14.58	319.71	403.52	4.63	471.68	462.80	11.67

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	358.12	247.20	259.13	1070.41	0.33	2.33	2.04	9.02
MEAN	18.01	358.06	244.35	261.73	1067.99	0.34	2.40	2.13	7.35
HUB	15.22	379.84	272.51	264.62	1065.61	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	429.22	316.67	182.02	0.30	5049.51	0.92	0.88		
MEAN	378.56	294.13	134.21	0.28	4402.19	0.92	0.88	0.88	1.70
HUB	319.98	268.84	47.47	0.25	4149.65	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.38	1.12	4.98	493.59	1.04	483.29	473.25	8.09
MEAN	5.30	1.10	4.91	491.41	1.03	481.11	472.04	8.74
HUB	5.27	1.10	4.84	490.55	1.03	478.97	471.67	9.43

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	43.65	35.09	31.50	3.59	0.93	0.54	1.40
MEAN	43.03	27.15	23.50	3.65	0.95	0.52	1.63
HUB	45.84	10.17	6.50	3.67	0.95	0.50	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.960	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	383.2183	245.0318	294.6450	1066.8044	0.3592	-0.1086	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3149	4.8671	480.0613	472.4241	9.1520	39.7475	30.6000	-9.1475

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	285.0870	60.4405	278.6065	1072.6350	0.2658	0.3611	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.3089	5.0579	485.3262	472.0436	491.5697	0.0245	0.4582

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	295.4939	0.0000	295.4939	1072.0868	0.2756	0.3513	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0244	484.8412	472.1378	0.0000	0.0600	0.0636	0.2792

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8354	5.2930	1.1008	491.8503	15.3037	190.5325	1.4770

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
95325.922	0.517	144.068	254758.500	0.679828E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.786 EfDer = 0.975 SH = 0.798744E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.744	2408.660	5.293	491.850	1.000	1.000	0.980

W Kg/sec = 12.156 Wdry = 26.722 WH2O = 0.021 lbm/sec H2O = 0.362g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.327	2473.530	1.380	0.249	53.374	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56775.223	20977.928	2.575	545.479	211.811	424.468	2.004

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	249.80	-0.09	249.80	0.23	0.46	433.21
MEAN	17.74	0.00	-0.02	249.80	-0.09	249.80	0.23	0.42	
HUB	15.05	0.00	-0.02	249.80	-0.09	249.80	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.37	46.36	13.01	421.86	490.35	5.10	486.84	472.35	9.01
MEAN	56.19	43.40	12.79	372.85	448.87	5.10	486.84	472.35	9.01
HUB	51.71	38.84	12.87	316.34	403.15	5.10	486.84	472.35	9.01

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	350.15	231.17	262.99	1085.93	0.32	2.26	1.98	8.75
MEAN	17.51	352.03	231.42	265.27	1083.86	0.32	2.34	2.07	6.78
HUB	14.85	375.76	263.59	267.80	1081.84	0.35	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	416.40	321.67	185.22	0.30	4581.29	0.92	0.89		
MEAN	367.98	298.36	136.56	0.28	4052.96	0.92	0.89	0.89	1.65
HUB	312.14	272.17	48.55	0.25	3915.61	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.85	1.11	5.45	507.30	1.03	497.47	481.05	6.66
MEAN	5.79	1.09	5.38	505.52	1.03	495.58	480.16	7.09
HUB	5.77	1.09	5.31	505.06	1.03	493.73	480.04	7.53

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.32	35.16	31.50	3.66	0.93	0.51	1.40
MEAN	41.10	27.24	23.50	3.74	0.94	0.49	1.62
HUB	44.55	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.975	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	378.3560	232.9422	298.1463	1082.6388	0.3495	-0.1164	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7972	5.3338	494.4763	480.5306	7.4195	38.0006	31.5000	-6.5006

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.3924   293.4095    64.0053   286.3433  1087.6357     0.2698     0.3096     2.3726

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.7935     5.5116   499.0538   480.1858   451.3937     0.0190     0.4329

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   298.3670     0.0000   298.3670  1087.3688     0.2744     0.3360     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.4895   498.8187   480.2715     0.0000     0.0600     0.0507     0.2570

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8559     5.7802     1.0920   505.9591    14.1098   195.9743     1.5192

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  87958.031       0.507     132.932  253168.688   0.905756E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =11.193   EfDer =  0.985    SH =  0.105344E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.744    2408.660       5.780     505.959       1.000       1.000       0.980
 W Kg/sec =  12.156  Wdry =  26.716  WH2O = 0.028  lbm/sec   H2O =   0.508g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     67.174    2438.798       1.380       0.249      53.382      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  53450.363   20975.826       2.609     513.330     196.754     395.845       2.012

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   249.90    -0.09   249.90     0.23     0.44   409.89
 MEAN    16.97     0.00    -0.02   249.90    -0.09   249.90     0.23     0.40
 HUB     14.32     0.00    -0.02   249.90    -0.09   249.90     0.23     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.32    46.36    11.96   404.84   475.83     5.58   500.95   480.49     7.39
 MEAN    54.99    43.80    11.19   356.72   435.61     5.58   500.95   480.49     7.39
 HUB     50.31    37.84    12.47   301.00   391.28     5.58   500.95   480.49     7.39

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   337.14   211.79   262.31  1099.81      0.31     2.16     1.89     8.34
 MEAN    16.57   338.98   212.16   264.37  1097.95      0.31     2.24     1.97     6.35
 HUB     13.89   361.21   243.69   266.62  1096.12      0.33     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    396.85   321.02   185.05     0.29  4000.33      0.92     0.90
 MEAN   348.37   297.40   136.22     0.27  3517.77      0.92     0.90     0.90     1.61
 HUB    291.96   270.95    48.27     0.25  3386.12      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.30     1.09     5.91   519.44     1.03   510.33   487.58     5.80
 MEAN     6.24     1.08     5.84   517.81     1.02   508.60   486.82     6.12
 HUB      6.22     1.08     5.77   517.37     1.02   506.91   486.72     6.45

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.92    35.20    31.50     3.70     0.93     0.48     1.40
 MEAN    38.75    27.26    23.50     3.76     0.94     0.47     1.62
 HUB     42.43    10.26     6.50     3.76     0.94     0.47     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.985       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   359.9688   213.3527   289.9279  1097.0830     0.3281    -0.0923     2.1803
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    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.2475     5.8046   507.8225   487.1318     6.3249    36.3487    32.4000    -3.9487

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   291.1619    65.2991   283.7451  1100.9513     0.2645     0.2723     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2456     5.9532   511.4133   486.8549   432.2457     0.0147     0.4113

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   288.8419     0.0000   288.8419  1101.0579     0.2623     0.3219     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9472   511.5213   486.9202     0.0000     0.0600     0.0419     0.2576

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8693     6.2344     1.0786   518.2069    12.2486   211.2859     1.6379

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  76425.938       0.485     115.504  259031.453   0.118223E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.734   EfDer =  0.993    SH =  0.136107E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.744    2408.660       6.234     518.207       1.000       1.000       0.980
 W Kg/sec =  12.156  Wdry =  26.707  WH2O = 0.036  lbm/sec   H2O =   0.693g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     63.028    2409.806       1.380       0.249      53.392      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50615.797   20973.285       2.760     509.668     184.650     384.739       2.084

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   238.34    -0.08   238.34     0.22     0.41   385.25
 MEAN    15.91     0.00    -0.02   238.34    -0.08   238.34     0.22     0.37
 HUB     13.07     0.00    -0.02   238.34    -0.08   238.34     0.22     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.25    47.36    10.89   385.08   452.94     6.04   513.66   487.15     6.41
 MEAN    54.53    44.80     9.73   334.48   410.78     6.04   513.66   487.15     6.41
 HUB     49.06    38.84    10.22   274.73   363.77     6.04   513.66   487.15     6.41

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   320.12   198.98   250.77  1112.26      0.29     2.05     1.78     7.43
 MEAN    15.50   319.12   194.78   252.78  1110.34      0.29     2.13     1.86     5.75
 HUB     12.59   335.70   218.42   254.92  1108.44      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    377.09   307.58   178.11     0.28  3571.26     0.92     0.91
 MEAN   325.75   284.69   130.97     0.26  3019.99     0.92     0.91     0.91     1.60
 HUB    264.64   259.07    46.21     0.23  2751.03     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.73     1.08     6.35   530.23     1.02   522.02   493.15     5.26
 MEAN     6.65     1.07     6.28   528.37     1.02   520.22   492.32     5.55
 HUB      6.61     1.06     6.21   527.47     1.02   518.44   492.00     5.84

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.43    35.38    31.50     3.88     0.93     0.48     1.40
 MEAN    37.62    27.39    23.50     3.89     0.94     0.45     1.64
 HUB     40.59    10.28     6.50     3.78     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
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    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   349.4442   198.3558   287.6913  1108.9216     0.3151    -0.1723     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6535     6.2170   518.9138   492.6297     5.8049    34.5853    33.0000    -1.5853

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   294.0095    67.1373   286.2414  1111.9659     0.2644     0.1545     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6515     6.3404   521.7697   492.3937   410.5396     0.0253     0.3869

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   14.7013   286.0030     0.0000   286.0030  1112.3533     0.2571     0.3102     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3524   522.1417   492.4530     0.0000     0.0600     0.0375     0.1863

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8786     6.6469     1.0662   528.6895    10.4832   230.8788     1.7898

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  65480.563       0.460      98.962  271607.625   0.151203E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1550   Tt4 =   528.6895   T1  =   457.7317

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    442269.06    668.4084     86.5971      1.5586      0.8388     15.2402     1.1550     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 38334 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.330   EfDer =  0.956    SH =  0.191796E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.782    2333.126       4.199     451.558       1.000       1.000       0.980
  W Kg/sec =  11.719  Wdry =  25.777  WH2O = 0.005  lbm/sec   H2O =   0.076g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     84.209    2500.551       1.381       0.248      53.355      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  62582.313   20228.230       3.373     831.557     246.508     619.754       2.514

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   180.62    -0.06   180.62     0.18     0.44   450.16
 MEAN    17.06     0.00    -0.02   180.62    -0.06   180.62     0.18     0.38
 HUB     12.51     0.00    -0.02   180.62    -0.06   180.62     0.18     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.73    50.47    16.26   420.03   457.28      4.11   448.94   444.44     9.69
 MEAN    62.53    47.20    15.33   347.35   391.56      4.11   448.94   444.44     9.69
 HUB     54.66    38.62    16.04   254.71   312.30      4.11   448.94   444.44     9.69

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   377.02   288.81   242.35  1043.98      0.36     7.29     6.52    16.04
 MEAN    18.04   381.78   292.49   245.37  1041.11      0.37     7.43     6.80    12.53
 HUB     15.00   413.71   329.97   249.55  1037.56      0.40     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    420.03   275.60   131.23     0.26  5959.35      0.92     0.87
 MEAN   367.22   256.50    74.73     0.25  5276.36      0.92     0.87     0.87     1.75
 HUB    305.41   250.76    24.57     0.24  4950.36      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.80     1.14     4.39   471.07     1.04   459.64   458.77     8.66
 MEAN     4.73     1.13     4.32   468.83     1.04   457.11   457.32     9.58
 HUB      4.70     1.12     4.22   467.77     1.04   454.00   456.73    10.86

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.00    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    50.01    16.94    12.70     4.24     0.95     0.52     2.22
 HUB     52.90    -5.62    -9.30     3.68     0.95     0.39     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.956       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   393.0114   291.9187   263.1376  1040.7445     0.3776    -0.0367     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.7392     4.3004   456.8067   457.6585    10.0526    47.9683    35.4000   -12.5683

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   261.6801    64.0149   253.7293  1048.5807     0.2496     0.5108     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.7287     4.5307   463.7181   457.3573   554.9116     0.0342     0.6026

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   260.5527     0.0000   260.5527  1048.6171     0.2485     0.4811     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.5115   463.7655   457.4875     0.0000     0.0600     0.0844     0.4665
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8177     4.7068     1.1209   469.2217    17.6647   168.6554     1.3074

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 109889.438       0.623     160.104  273014.438   0.336867E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.785   EfDer =  0.960    SH =  0.508275E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.782    2333.126       4.707     469.221       1.000       1.000       0.980
 W Kg/sec =  11.719  Wdry =  25.769  WH2O = 0.013  lbm/sec   H2O =   0.215g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.584    2453.055       1.381       0.249      53.365      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58633.895   20225.719       2.633     590.487     224.230     468.502       2.089

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   238.31    -0.08   238.31     0.23     0.46   439.90
 MEAN    18.08     0.00    -0.02   238.31    -0.08   238.31     0.23     0.42
 HUB     15.21     0.00    -0.02   238.31    -0.08   238.31     0.23     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.34    46.36    13.98   418.41   481.58     4.54   464.66   458.08    13.41
 MEAN    57.09    42.30    14.79   368.08   438.56     4.54   464.66   458.08    13.41
 HUB     52.43    37.84    14.59   309.68   390.83     4.54   464.66   458.08    13.41

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   347.07   239.12   251.56  1061.80      0.33     2.33     2.04     9.02
 MEAN    18.01   347.02   236.50   253.95  1059.52      0.33     2.40     2.13     7.35
 HUB     15.22   368.10   263.92   256.61  1057.28      0.35     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    415.76   307.38   176.64     0.29  4884.46      0.92     0.88
 MEAN   366.69   285.38   130.19     0.27  4260.77      0.92     0.88     0.88     1.69
 HUB    309.95   260.71    46.03     0.25  4018.83      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.24     1.11     4.87   485.20     1.03   475.52   468.43     9.38
 MEAN     5.17     1.10     4.80   483.16     1.03   473.48   467.24    10.12
 HUB      5.14     1.09     4.73   482.37     1.03   471.48   466.86    10.89

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.55    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN    42.96    27.14    23.50     3.64     0.95     0.51     1.63
 HUB     45.80    10.17     6.50     3.67     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.960       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   371.3845   237.1601   285.7997  1058.3921     0.3509    -0.1088     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.1781     4.7608   472.4966   467.6041    10.5873    39.6863    30.6000    -9.0863

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   276.9044    58.7057   270.6099  1063.8838     0.2603     0.3593     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.1729     4.9380   477.4153   467.2632   491.5697     0.0238     0.4564

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   286.9464     0.0000   286.9464  1063.3647     0.2698     0.3495     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9066	476.9606	467.3498	0.0000	0.0600	0.0633	0.2771

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8354	5.1578	1.0958	483.5723	14.3518	190.6260	1.4777

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
89366.453	0.517	130.203	248163.141	0.578376E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.707 EfDer = 0.976 SH = 0.677741E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.782	2333.126	5.158	483.572	1.000	1.000	0.980

W Kg/sec = 11.719 Wdry = 25.764 WH2O = 0.017 lbm/sec H2O = 0.305g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.948	2416.382	1.381	0.249	53.370	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55158.109	20224.373	2.626	545.479	207.755	424.468	2.043

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	242.68	-0.08	242.68	0.23	0.45	423.20
MEAN	17.74	0.00	-0.02	242.68	-0.08	242.68	0.23	0.41	
HUB	15.05	0.00	-0.02	242.68	-0.08	242.68	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.30	46.36	12.94	408.63	475.34	4.98	478.84	467.54	10.44
MEAN	56.11	43.40	12.71	361.16	435.19	4.98	478.84	467.54	10.44
HUB	51.63	38.84	12.79	306.42	390.95	4.98	478.84	467.54	10.44

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	339.59	223.05	256.07	1076.42	0.32	2.26	1.98	8.75
MEAN	17.51	341.55	223.60	258.18	1074.48	0.32	2.34	2.07	6.78
HUB	14.85	364.62	255.11	260.51	1072.58	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	403.34	313.17	180.29	0.29	4420.24	0.92	0.89		
MEAN	356.44	290.35	132.84	0.27	3916.01	0.92	0.89	0.89	1.64
HUB	302.35	264.76	47.24	0.25	3789.61	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.67	1.10	5.30	498.02	1.03	488.76	476.16	7.79
MEAN	5.61	1.09	5.24	496.37	1.03	487.01	475.28	8.27
HUB	5.60	1.09	5.17	495.96	1.03	485.29	475.17	8.78

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.06	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	40.90	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.40	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	367.1684	225.0708	290.0961	1073.3124	0.3421	-0.1173	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6251	5.1932	485.9640	475.6424	8.6547	37.8061	31.5000	-6.3061

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	285.8308	62.3521	278.9471	1078.0068	0.2651	0.3050	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6219	5.3573	490.2264	475.3325	451.3937	0.0183	0.4290

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	290.6150	0.0000	290.6150	1077.7537	0.2696	0.3324	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3368	490.0052	475.4128	0.0000	0.0600	0.0499	0.2525

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8568	5.6095	1.0876	496.7825	13.2111	196.6385	1.5243

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
82319.156	0.506	119.936	246917.047	0.767381E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.034 EfDer = 0.986 SH = 0.891603E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.782	2333.126	5.610	496.782	1.000	1.000	0.980

W Kg/sec = 11.719 Wdry = 25.759 WH2O = 0.023 lbm/sec H2O = 0.425g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
66.120	2384.038	1.380	0.249	53.377	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52081.703	20222.672	2.651	513.330	193.646	395.845	2.044

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	243.50	-0.08	243.50	0.23	0.43	400.69
MEAN	16.97	0.00	-0.02	243.50	-0.08	243.50	0.23	0.39	
HUB	14.32	0.00	-0.02	243.50	-0.08	243.50	0.23	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.17	46.36	11.81	392.14	461.66	5.42	492.03	475.61	8.65
MEAN	54.83	43.80	11.03	345.53	422.78	5.42	492.03	475.61	8.65
HUB	50.14	37.84	12.30	291.56	379.93	5.42	492.03	475.61	8.65

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	327.28	203.77	256.10	1089.49	0.30	2.16	1.89	8.34
MEAN	16.57	329.25	204.55	258.00	1087.75	0.30	2.24	1.97	6.35
HUB	13.89	351.00	235.72	260.07	1086.04	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	384.40	313.40	180.63	0.29	3848.80	0.92	0.90		
MEAN	337.45	290.22	132.90	0.27	3391.54	0.92	0.90	0.90	1.60
HUB	282.81	264.30	47.08	0.24	3275.40	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.09	1.09	5.72	509.35	1.03	500.76	482.62	6.84
MEAN	6.03	1.07	5.66	507.86	1.02	499.16	481.88	7.20
HUB	6.02	1.07	5.60	507.48	1.02	497.60	481.79	7.57

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.51	35.20	31.50	3.70	0.93	0.48	1.40
MEAN	38.41	27.25	23.50	3.75	0.94	0.46	1.62
HUB	42.19	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.986	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	349.7738	205.6961	282.8972	1086.9200	0.3218	-0.0933	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.0409	5.6282	498.4197	482.1828	7.4403	36.0211	32.4000	-3.6211

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	284.3873	63.7798	277.1431	1090.5367	0.2608	0.2652	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.0393	5.7641	501.7449	481.9337	432.2457	0.0142	0.4055

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	282.1004	0.0000	282.1004	1090.6412	0.2587	0.3162	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.7587	501.8489	481.9960	0.0000	0.0600	0.0411	0.2509

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8705	6.0290	1.0748	508.2299	11.4481	212.6206	1.6482

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
71389.609	0.483	104.012	252918.344	0.100019E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.502 EfDer = 0.994 SH = 0.115124E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.782	2333.126	6.029	508.230	1.000	1.000	0.980

W Kg/sec = 11.719 Wdry = 25.752 WH2O = 0.030 lbm/sec H2O = 0.578g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.224	2357.036	1.380	0.249	53.386	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49449.102	20220.605	2.796	509.668	182.268	384.739	2.111

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	232.85	-0.08	232.85	0.21	0.40	376.81
MEAN	15.91	0.00	-0.02	232.85	-0.08	232.85	0.21	0.37	
HUB	13.07	0.00	-0.02	232.85	-0.08	232.85	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.03	47.36	10.67	373.00	439.78	5.84	503.88	482.21	7.56
MEAN	54.30	44.80	9.50	323.99	399.05	5.84	503.88	482.21	7.56
HUB	48.82	38.84	9.98	266.11	353.66	5.84	503.88	482.21	7.56

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	310.98	190.99	245.42	1101.22	0.28	2.05	1.78	7.43
MEAN	15.50	310.29	187.43	247.28	1099.42	0.28	2.13	1.86	5.75
HUB	12.59	326.68	211.17	249.26	1097.65	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	365.26	301.01	174.28	0.27	3427.77	0.92	0.91		
MEAN	315.54	278.49	128.10	0.25	2906.05	0.92	0.91	0.91	1.58
HUB	256.34	253.32	45.17	0.23	2659.63	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.48	1.07	6.13	519.41	1.02	511.67	488.13	6.24
MEAN	6.41	1.06	6.07	517.71	1.02	510.00	487.31	6.57
HUB	6.38	1.06	6.00	516.91	1.02	508.36	487.01	6.91

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.89	35.38	31.50	3.88	0.93	0.47	1.40
MEAN	37.16	27.39	23.50	3.89	0.94	0.44	1.64
HUB	40.27	10.27	6.50	3.77	0.94	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	340.0004	190.8709	281.3691	1098.0603	0.3096	-0.1740	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.4142	6.0073	508.7502	487.6142	6.8787	34.1516	33.0000	-1.1516

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   287.7949    65.7182   280.1911  1100.8879     0.2614     0.1444     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.4126     6.1191   511.3761   487.4025   410.5396     0.0246     0.3796

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   279.9675     0.0000   279.9675  1101.2639     0.2542     0.3026     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.1304   511.7323   487.4581     0.0000     0.0600     0.0371     0.1764

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8794     6.4082     1.0629   518.0114     9.7821   232.9534     1.8058

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  61056.477       0.458      88.957  265466.188   0.127893E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1472   Tt4 =   518.0114   T1  =   451.5583

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    414021.16    603.2117     84.2089      1.5260      0.8394     15.3298      1.1472     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 37357 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.368   EfDer =  0.955    SH =  0.175383E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     26.378    2304.370       4.337     449.669       1.000       1.000       0.980
  W Kg/sec =  11.990  Wdry =  26.373  WH2O = 0.005  lbm/sec   H2O =   0.072g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.240    2474.914       1.381       0.248      53.354      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  61710.008   20695.666       3.413     831.557     243.671     619.754       2.543

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   178.10    -0.06   178.10     0.17     0.44   445.55
 MEAN    17.06     0.00    -0.02   178.10    -0.06   178.10     0.17     0.38
 HUB     12.51     0.00    -0.02   178.10    -0.06   178.10     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.77    50.47    16.30   414.86   451.53     4.25   447.12   443.20    10.02
 MEAN    62.57    47.20    15.37   343.07   386.60     4.25   447.12   443.20    10.02
 HUB     54.71    38.62    16.09   251.57   308.28     4.25   447.12   443.20    10.02

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   372.34   285.35   239.20  1041.62      0.36     7.29     6.52    16.04
 MEAN    18.04   376.96   288.93   242.11  1038.81      0.36     7.43     6.80    12.53
 HUB     15.00   408.38   325.86   246.15  1035.35      0.39     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    414.86   272.01   129.51     0.26  5887.94      0.92     0.87
 MEAN   362.69   253.10    73.76     0.24  5212.21      0.92     0.87     0.87     1.75
 HUB    301.64   247.33    24.22     0.24  4888.73      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.95     1.14     4.53   468.71     1.04   457.56   457.47     8.94
 MEAN     4.87     1.12     4.46   466.52     1.04   455.10   456.01     9.88
 HUB      4.84     1.12     4.35   465.48     1.04   452.07   455.41    11.18

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.03    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    50.04    16.94    12.70     4.24     0.95     0.52     2.22
 HUB     52.93    -5.62    -9.30     3.68     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.955       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   388.0224   288.3696   259.6234  1038.4562     0.3737    -0.0366     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.8828     4.4396   454.8003   456.3411    10.3587    48.0028    35.4000   -12.6028

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   258.3804    63.2077   250.5298  1046.1115     0.2470     0.5112     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.8723     4.6724   461.5367   456.0638   554.9116     0.0339     0.6027

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   257.2556     0.0000   257.2556  1046.1479     0.2459     0.4810     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.6528   461.5833   456.1828     0.0000     0.0600     0.0846     0.4664
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8173     4.8500     1.1183   466.9026    17.2349   168.5029     1.3062

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 107209.781       0.623     159.809  280117.344   0.304491E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.791   EfDer =  0.960    SH =  0.457444E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.378    2304.370       4.850     466.902       1.000       1.000       0.980
 W Kg/sec =  11.990  Wdry =  26.365  WH2O = 0.012  lbm/sec   H2O =   0.201g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.851    2428.830       1.381       0.249      53.363      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57897.367   20693.375       2.659     590.487     222.078     468.502       2.110

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   235.32    -0.08   235.32     0.22     0.45   435.56
 MEAN    18.08     0.00    -0.02   235.32    -0.08   235.32     0.22     0.41
 HUB     15.21     0.00    -0.02   235.32    -0.08   235.32     0.22     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.35    46.36    13.99   413.25   475.62     4.68   462.45   456.73    13.77
 MEAN    57.09    42.30    14.79   363.54   433.12     4.68   462.45   456.73    13.77
 HUB     52.43    37.84    14.59   305.86   385.98     4.68   462.45   456.73    13.77

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950       77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   342.84   236.05   248.64  1059.02      0.32     2.33     2.04     9.02
 MEAN    18.01   342.79   233.51   250.96  1056.80      0.32     2.40     2.13     7.35
 HUB     15.22   363.62   260.66   253.53  1054.61      0.34     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    410.63   303.81   174.59     0.29  4821.77      0.92     0.88
 MEAN   362.17   282.01   128.66     0.27  4207.00      0.92     0.88     0.88     1.69
 HUB    306.13   257.57    45.46     0.24  3969.27      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.39     1.11     5.01   482.48     1.03   473.04   467.08     9.69
 MEAN     5.32     1.10     4.95   480.49     1.03   471.05   465.88    10.44
 HUB      5.29     1.09     4.88   479.73     1.03   469.10   465.50    11.23

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.51    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN    42.94    27.14    23.50     3.64     0.95     0.51     1.63
 HUB     45.79    10.17     6.50     3.67     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.960       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   366.8518   234.1671   282.3934  1055.7008     0.3475    -0.1089     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3256     4.9043   470.0909   466.2411    10.9158    39.6663    30.6000    -9.0663

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   273.7515    58.0373   267.5286  1061.0630     0.2580     0.3587     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3204     5.0829   474.8811   465.9273   491.5697     0.0235     0.4557

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.8235   283.6528     0.0000   283.6528  1060.5558     0.2675     0.3488     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0512	474.4378	466.0071	0.0000	0.0600	0.0632	0.2763

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8354	5.3052	1.0938	480.8996	13.9981	190.6464	1.4779

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
87150.813	0.517	129.908	254713.828	0.519962E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.679 EfDer = 0.976 SH = 0.608754E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.378	2304.370	5.305	480.899	1.000	1.000	0.980

W Kg/sec = 11.990 Wdry = 26.361 WH2O = 0.016 lbm/sec H2O = 0.284g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.375	2393.222	1.381	0.249	53.368	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54534.988	20692.145	2.647	545.479	206.070	424.468	2.060

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	239.94	-0.08	239.94	0.23	0.44	419.15
MEAN	17.74	0.00	-0.02	239.94	-0.08	239.94	0.23	0.40	
HUB	15.05	0.00	-0.02	239.94	-0.08	239.94	0.23	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.27	46.36	12.91	403.60	469.60	5.12	476.28	466.18	10.79
MEAN	56.08	43.40	12.68	356.71	429.97	5.12	476.28	466.18	10.79
HUB	51.60	38.84	12.76	302.65	386.29	5.12	476.28	466.18	10.79

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	335.57	219.98	253.40	1073.31	0.31	2.26	1.98	8.75
MEAN	17.51	337.53	220.63	255.44	1071.42	0.32	2.34	2.07	6.78
HUB	14.85	360.36	251.90	257.70	1069.57	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	398.37	309.90	178.39	0.29	4359.48	0.92	0.89		
MEAN	352.05	287.27	131.42	0.27	3863.87	0.92	0.89	0.89	1.64
HUB	298.62	261.90	46.73	0.24	3741.91	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.83	1.10	5.45	494.98	1.03	485.94	474.81	8.08
MEAN	5.76	1.09	5.39	493.38	1.03	484.23	473.93	8.57
HUB	5.75	1.08	5.32	492.98	1.03	482.56	473.81	9.09

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.96	35.14	31.50	3.64	0.93	0.51	1.40
MEAN	40.82	27.22	23.50	3.72	0.94	0.49	1.62
HUB	44.35	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	362.8775	222.0737	286.9901	1070.2742	0.3391	-0.1175	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7761	5.3400	483.2073	474.2818	8.9654	37.7328	31.5000	-6.2328

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	282.9053	61.7139	276.0921	1074.8530	0.2632	0.3033	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7729	5.5050	487.3528	473.9959	451.3937	0.0180	0.4275

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	287.6229	0.0000	287.6229	1074.6051	0.2677	0.3310	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4843	487.1368	474.0705	0.0000	0.0600	0.0496	0.2508

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8571	5.7604	1.0858	493.7767	12.8780	196.8805	1.5262

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
80226.555	0.506	119.587	253557.313	0.688955E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.974 EfDer = 0.986 SH = 0.800359E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.378	2304.370	5.760	493.777	1.000	1.000	0.980

W Kg/sec = 11.990 Wdry = 26.356 WH2O = 0.021 lbm/sec H2O = 0.394g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.675	2361.810	1.380	0.249	53.374	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51553.586	20690.590	2.669	513.330	192.334	395.845	2.058

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	241.03	-0.08	241.03	0.22	0.42	396.95
MEAN	16.97	0.00	-0.02	241.03	-0.08	241.03	0.22	0.39	
HUB	14.32	0.00	-0.02	241.03	-0.08	241.03	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.11	46.36	11.75	387.31	456.25	5.57	489.12	474.26	8.97
MEAN	54.77	43.80	10.97	341.27	417.87	5.57	489.12	474.26	8.97
HUB	50.08	37.84	12.24	287.97	375.59	5.57	489.12	474.26	8.97

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	323.52	200.74	253.71	1086.07	0.30	2.16	1.89	8.34
MEAN	16.57	325.53	201.66	255.54	1084.38	0.30	2.24	1.97	6.35
HUB	13.89	347.09	232.68	257.55	1082.72	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	379.67	310.45	178.93	0.29	3791.58	0.92	0.90		
MEAN	333.29	287.45	131.63	0.27	3343.74	0.92	0.90	0.90	1.59
HUB	279.32	261.74	46.64	0.24	3233.15	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.24	1.08	5.87	506.01	1.02	497.61	481.27	7.12
MEAN	6.18	1.07	5.81	504.57	1.02	496.06	480.53	7.49
HUB	6.17	1.07	5.75	504.21	1.02	494.54	480.44	7.87

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.35	35.19	31.50	3.69	0.93	0.48	1.40
MEAN	38.28	27.25	23.50	3.75	0.94	0.46	1.62
HUB	42.10	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.986	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	345.8736	202.7965	280.1823	1083.5630	0.3192	-0.0936	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.1943	5.7776	495.3322	480.8232	7.7438	35.8971	32.4000	-3.4971

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	281.7692	63.1926	274.5916	1087.0845	0.2592	0.2624	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.1928     5.9140   498.5596   480.5932   432.2457     0.0139     0.4033

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   279.4955     0.0000   279.4955  1087.1882     0.2571     0.3141     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9085   498.6621   480.6514     0.0000     0.0600     0.0408     0.2483

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8709     6.1825     1.0733   504.9276    11.1516   213.1304     1.6522

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  69521.039       0.482     103.629  259834.391   0.897768E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.414   EfDer =  0.994    SH =  0.103351E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.378    2304.370       6.182     504.927       1.000       1.000       0.980
 W Kg/sec =  11.990  Wdry =  26.350  WH2O = 0.027  lbm/sec   H2O =   0.536g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     61.879    2335.585       1.380       0.249      53.382      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  48998.496   20688.689       2.812     509.668     181.245     384.739       2.123

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   230.73    -0.08   230.73     0.21     0.40   373.38
 MEAN    15.91     0.00    -0.02   230.73    -0.08   230.73     0.21     0.36
 HUB     13.07     0.00    -0.02   230.73    -0.08   230.73     0.21     0.32

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.95    47.36    10.59   368.40   434.76     5.99   500.66   480.85     7.89
 MEAN    54.21    44.80     9.41   320.00   394.57     5.99   500.66   480.85     7.89
 HUB     48.73    38.84     9.89   262.83   349.80     5.99   500.66   480.85     7.89

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   307.49   187.96   243.36  1097.53     0.28     2.05     1.78     7.43
 MEAN    15.50   306.92   184.66   245.15  1095.78     0.28     2.13     1.86     5.75
 HUB     12.59   323.21   208.37   247.07  1094.06     0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    360.76   298.47   172.80     0.27  3373.45     0.92     0.91
 MEAN   311.65   276.09   126.99     0.25  2863.01     0.92     0.91     0.91     1.58
 HUB    253.18   251.10    44.81     0.23  2624.43     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.63     1.07     6.29   515.80     1.02   508.22   486.77     6.53
 MEAN     6.56     1.06     6.22   514.16     1.02   506.61   485.95     6.87
 HUB      6.53     1.06     6.15   513.39     1.02   505.01   485.65     7.21

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     37.68    35.38    31.50     3.88     0.93     0.47     1.40
 MEAN    36.99    27.38    23.50     3.88     0.94     0.44     1.64
 HUB     40.14    10.28     6.50     3.78     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   336.3929   188.0433   278.9263  1094.4376     0.3074    -0.1748     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.5693     6.1583   505.3803   486.2452     7.1879    33.9866    33.0000    -0.9866
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   285.3913    65.1693   277.8510  1097.1840     0.2601     0.1405     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     6.5678     6.2701   507.9221   486.0497   410.5396     0.0243     0.3769

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   277.6338     0.0000   277.6338  1097.5552     0.2530     0.2997     0.5109

Blockage4   Ps4       Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     6.2815   508.2723   486.1017     0.0000     0.0600     0.0369     0.1725

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4       Tt2avg      Del T     Ns          Ns nondim
 0.8797     6.5633     1.0616   514.4495     9.5225   233.7643     1.8121

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  59413.910       0.457      88.563  272833.688   0.114827E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1441   Tt4 =   514.4495   T1  =   449.6691

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    403522.09    601.4967     83.2403      1.5133      0.8396     15.3681      1.1441     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 34281 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.425   EfDer =  0.955    SH =  0.169925E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     28.353    2237.630       4.829     451.603       1.000       1.000       0.980
  W Kg/sec =  12.888  Wdry =  28.348  WH2O = 0.005  lbm/sec   H2O =   0.078g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.540    2398.087       1.381       0.248      53.354      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59777.527   22245.760       3.527     831.557     235.769     619.754       2.629

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   172.53    -0.06   172.53     0.17     0.42   431.72
 MEAN    17.06     0.00    -0.02   172.53    -0.06   172.53     0.17     0.36
 HUB     12.51     0.00    -0.02   172.53    -0.06   172.53     0.17     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.82    50.47    16.35   402.84   438.29     4.74   449.21   445.17     9.75
 MEAN    62.62    47.20    15.42   333.13   375.21     4.74   449.21   445.17     9.75
 HUB     54.77    38.62    16.15   244.28   299.11     4.74   449.21   445.17     9.75

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   361.60   277.08   232.34  1043.28      0.35     7.29     6.52    16.04
 MEAN    18.04   366.01   280.62   234.99  1040.65      0.35     7.43     6.80    12.53
 HUB     15.00   396.32   316.42   238.65  1037.40      0.38     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    402.84   264.20   125.77     0.25  5717.31      0.92     0.87
 MEAN   352.19   245.64    71.57     0.24  5062.31      0.92     0.87     0.87     1.75
 HUB    292.91   239.80    23.51     0.23  4746.98      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.46     1.13     5.03   469.55     1.04   459.04   458.72     8.88
 MEAN     5.39     1.12     4.95   467.50     1.04   456.73   457.33     9.75
 HUB      5.35     1.11     4.85   466.51     1.03   453.88   456.74    10.94

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.02    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    50.06    16.94    12.70     4.24     0.95     0.52     2.22
 HUB     52.98    -5.63    -9.30     3.67     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.955       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   376.7172   280.0765   251.9385  1040.3147     0.3621    -0.0368     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3972     4.9354   456.4458   457.6358    10.2047    48.0275    35.4000   -12.6275

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   251.2896    61.4731   243.6545  1047.4988     0.2399     0.5110     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3868     5.1780   462.7773   457.3915   554.9116     0.0329     0.6018

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   250.1552     0.0000   250.1552  1047.5355     0.2388     0.4798     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.1570   462.8229   457.4998     0.0000     0.0600     0.0848     0.4652
```

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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8166     5.3630     1.1107   467.8524    16.2505   168.2937     1.3046

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 101093.602       0.623     161.978  299815.500   0.289880E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.747   EfDer =  0.960    SH =  0.430148E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     28.353    2237.630       5.363     467.852       1.000       1.000       0.980
 W Kg/sec =  12.888  Wdry =  28.341  WH2O = 0.012  lbm/sec   H2O =   0.209g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.809    2356.091       1.381       0.249      53.362      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  56315.379   22243.490       2.733     590.487     216.098     468.502       2.168

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   228.89    -0.08   228.89     0.22     0.44   422.51
 MEAN    18.08     0.00    -0.02   228.89    -0.08   228.89     0.22     0.40
 HUB     15.21     0.00    -0.02   228.89    -0.08   228.89     0.22     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.30     46.36    13.94   401.28   462.04     5.19   463.64   458.01    13.58
 MEAN    57.05     42.30    14.75   353.01   420.79     5.19   463.64   458.01    13.58
 HUB     52.39     37.84    14.55   297.01   375.03     5.19   463.64   458.01    13.58

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   333.23   228.50   242.54  1059.61      0.31     2.33     2.04     9.02
 MEAN    18.01   333.28   226.32   244.65  1057.53      0.32     2.40     2.13     7.35
 HUB     15.22   353.59   253.01   247.00  1055.49      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    398.74   296.32   170.24     0.28  4667.65      0.92     0.88
 MEAN   351.68   274.90   125.36     0.26  4077.41      0.92     0.88     0.88     1.69
 HUB    297.26   250.93    44.25     0.24  3852.81      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.92     1.10     5.53   482.50     1.03   473.58   467.90     9.81
 MEAN     5.85     1.09     5.46   480.64     1.03   471.72   466.75    10.51
 HUB      5.82     1.08     5.39   479.94     1.03   469.90   466.39    11.25

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.29    35.06    31.50     3.56     0.93     0.53     1.40
 MEAN    42.77    27.13    23.50     3.63     0.95     0.51     1.63
 HUB     45.69    10.16     6.50     3.66     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.960       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   356.7161   226.9539   275.2059  1056.4901     0.3376    -0.1095     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8561     5.4174   470.8056   467.0911    10.9652    39.5114    30.6000    -8.9114

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   267.2122    56.6509   261.1380  1061.5082     0.2517     0.3551     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8511     5.6020   475.2909   466.8144   491.5697     0.0225     0.4522

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   276.7988     0.0000   276.7988  1061.0292     0.2609     0.3456     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5690	474.8719	466.8867	0.0000	0.0600	0.0623	0.2725

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8361	5.8351	1.0880	481.0253	13.1740	191.0792	1.4812

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
82019.906	0.516	131.417	272980.156	0.487043E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.535 EfDer = 0.977 SH = 0.567048E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
28.353	2237.630	5.835	481.025	1.000	1.000	0.980

W Kg/sec = 12.888 Wdry = 28.337 WH2O = 0.016 lbm/sec H2O = 0.291g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.785	2323.606	1.381	0.249	53.367	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53244.418	22242.293	2.708	545.479	201.410	424.468	2.107

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	234.26	-0.08	234.26	0.22	0.43	406.95
MEAN	17.74	0.00	-0.02	234.26	-0.08	234.26	0.22	0.39	
HUB	15.05	0.00	-0.02	234.26	-0.08	234.26	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.14	46.36	12.78	391.91	456.66	5.64	476.62	467.05	10.91
MEAN	55.93	43.40	12.53	346.38	418.23	5.64	476.62	467.05	10.91
HUB	51.45	38.84	12.61	293.88	375.89	5.64	476.62	467.05	10.91

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	326.49	212.29	248.06	1072.99	0.30	2.26	1.98	8.75
MEAN	17.51	328.57	213.31	249.92	1071.24	0.31	2.34	2.07	6.78
HUB	14.85	351.00	244.36	251.97	1069.52	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	386.83	303.31	174.54	0.28	4206.99	0.92	0.89		
MEAN	341.85	281.04	128.54	0.26	3735.71	0.92	0.89	0.89	1.63
HUB	289.98	256.07	45.61	0.24	3629.98	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.37	1.09	5.98	494.22	1.03	485.66	475.32	8.34
MEAN	6.31	1.08	5.92	492.74	1.02	484.07	474.48	8.81
HUB	6.30	1.08	5.85	492.41	1.02	482.52	474.38	9.30

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.56	35.13	31.50	3.63	0.93	0.50	1.40
MEAN	40.48	27.22	23.50	3.72	0.94	0.48	1.62
HUB	44.12	10.26	6.50	3.76	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.977	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	353.3975	214.7070	280.6968	1070.1414	0.3302	-0.1186	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3210	5.8671	483.0947	474.8139	9.1972	37.4126	31.5000	-5.9126

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	277.1002	60.4475	270.4267	1074.4080	0.2579	0.2962	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3181	6.0362	486.9563	474.5618	451.3937	0.0171	0.4215

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	281.6672	0.0000	281.6672	1074.1730	0.2622	0.3254	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.0148	486.7515	474.6295	0.0000	0.0600	0.0483	0.2440

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8585	6.3052	1.0806	493.1197	12.0953	198.0078	1.5349

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
75345.914	0.504	120.724	272160.906	0.638634E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.734 EfDer = 0.988 SH = 0.737451E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
28.353	2237.630	6.305	493.120	1.000	1.000	0.980

W Kg/sec = 12.888 Wdry = 28.332 WH2O = 0.021 lbm/sec H2O = 0.399g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
64.452	2294.935	1.380	0.249	53.372	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50508.223	22240.803	2.720	513.330	188.745	395.845	2.097

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	236.14	-0.08	236.14	0.22	0.41	385.71
MEAN	16.97	0.00	-0.02	236.14	-0.08	236.14	0.22	0.38	
HUB	14.32	0.00	-0.02	236.14	-0.08	236.14	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.88	46.36	11.52	376.09	444.15	6.10	488.65	474.80	9.24
MEAN	54.53	43.80	10.73	331.39	406.98	6.10	488.65	474.80	9.24
HUB	49.83	37.84	11.99	279.63	366.06	6.10	488.65	474.80	9.24

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	315.15	193.00	249.14	1084.93	0.29	2.16	1.89	8.34
MEAN	16.57	317.36	194.45	250.82	1083.37	0.29	2.24	1.97	6.35
HUB	13.89	338.65	225.51	252.65	1081.83	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	368.67	304.84	175.67	0.28	3645.46	0.92	0.90		
MEAN	323.64	282.13	129.19	0.26	3224.17	0.92	0.90	0.90	1.58
HUB	271.23	256.75	45.72	0.24	3133.49	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.80	1.08	6.42	504.54	1.02	496.57	481.52	7.45
MEAN	6.74	1.07	6.35	503.22	1.02	495.14	480.82	7.81
HUB	6.73	1.07	6.29	502.94	1.02	493.74	480.76	8.18

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.76	35.19	31.50	3.69	0.93	0.47	1.40
MEAN	37.79	27.25	23.50	3.75	0.94	0.45	1.62
HUB	41.75	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.988	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	337.3957	195.5433	274.9521	1082.5789	0.3117	-0.0949	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7506	6.3168	494.4354	481.1064	8.0645	35.4201	32.4000	-3.0201

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	276.8431	62.0878	269.7910	1085.8379	0.2550	0.2522	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.7493     6.4549   497.4192   480.9043   432.2457     0.0133     0.3951

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   274.5850     0.0000   274.5850  1085.9397     0.2529     0.3060     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.4495   497.5192   480.9568     0.0000     0.0600     0.0397     0.2387

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8724     6.7387     1.0687   503.5673    10.4483   215.1280     1.6677

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  65127.602       0.479     104.351  279291.375   0.823268E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.087   EfDer =  0.995    SH =  0.942405E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     28.353    2237.630       6.739     503.567       1.000       1.000       0.980
 W Kg/sec =  12.888  Wdry =  28.326  WH2O = 0.027  lbm/sec   H2O =   0.534g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     60.942    2271.003       1.380       0.249      53.379      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  48154.203   22239.012       2.855     509.668     178.491     384.739       2.156

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   226.75    -0.08   226.75     0.21     0.39   363.06
 MEAN   15.91     0.00    -0.02   226.75    -0.08   226.75     0.21     0.35
 HUB    13.07     0.00    -0.02   226.75    -0.08   226.75     0.21     0.31

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    57.64    47.36    10.28   357.73   423.61      6.54   499.44   481.14     8.22
 MEAN   53.89    44.80     9.09   310.73   384.73      6.54   499.44   481.14     8.22
 HUB    48.39    38.84     9.55   255.22   341.46      6.54   499.44   481.14     8.22

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   299.82   180.14   239.67  1095.65      0.27     2.05     1.78     7.43
 MEAN   15.50   299.62   177.60   241.31  1094.04      0.27     2.13     1.86     5.75
 HUB    12.59   315.87   201.74   243.06  1092.44      0.29     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   350.31   293.94   170.17     0.27  3233.16      0.92     0.91
 MEAN  302.62   271.77   125.02     0.25  2753.62      0.92     0.91     0.91     1.56
 HUB   245.85   247.03    44.11     0.23  2540.88      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     7.20     1.07     6.84   513.69     1.02   506.48   486.81     6.90
 MEAN    7.13     1.06     6.77   512.19     1.02   504.99   486.04     7.23
 HUB     7.10     1.05     6.70   511.52     1.02   503.52   485.77     7.57

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    36.93    35.38    31.50     3.88     0.93     0.46     1.40
 MEAN   36.35    27.39    23.50     3.89     0.93     0.43     1.64
 HUB    39.69    10.29     6.50     3.79     0.93     0.42     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.995       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   328.7094   180.8565   274.4828  1092.7347     0.3008    -0.1771     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.1336     6.7054   503.8060   486.3181     7.5603    33.3809    33.0000    -0.3809
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   281.1361    64.1977   273.7082  1095.2523     0.2567     0.1262     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.1323     6.8172   506.1318   486.1482   410.5396     0.0236     0.3670

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   273.5056     0.0000   273.5056  1095.6130     0.2496     0.2891     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.8292   506.4712   486.1943     0.0000     0.0600     0.0366     0.1586

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8805     7.1274     1.0577   512.4675     8.9008   236.7589     1.8353

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  55522.234       0.452      88.961  293635.563   0.104265E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1348   Tt4 =   512.4675   T1  =   451.6031

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    379109.25    607.4313     80.5399      1.4761      0.8406     15.4249      1.1348     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 10% 30029 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =13.912   EfDer =  0.967    SH =  0.244170E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     32.504    2123.850       5.592     461.412       1.000       1.000       0.980
 W Kg/sec =  14.774  Wdry =  32.496  WH2O = 0.008  lbm/sec   H2O =   0.126g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.582    2251.828       1.381       0.249      53.356      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60458.672   25501.412       3.525     831.557     235.907     619.754       2.627

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   174.49    -0.06   174.49     0.17     0.40   405.39
 MEAN    17.06     0.00    -0.02   174.49    -0.06   174.49     0.17     0.35
 HUB     12.51     0.00    -0.02   174.49    -0.06   174.49     0.17     0.28

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.47    50.47    15.00   382.36   420.35      5.49   458.96   453.27    10.13
 MEAN    61.11    47.20    13.91   316.19   361.20      5.49   458.96   453.27    10.13
 HUB     53.04    38.62    14.42   231.86   290.23      5.49   458.96   453.27    10.13

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   347.58   254.95   236.25  1052.67      0.33     7.29     6.52    16.04
 MEAN    18.04   354.36   262.02   238.56  1050.44      0.34     7.43     6.80    12.53
 HUB     15.00   387.03   302.14   241.87  1047.59      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    382.36   268.42   127.41     0.25  5260.78      0.92     0.88
 MEAN   334.28   249.26    72.26     0.24  4726.90      0.92     0.88     0.88     1.66
 HUB    278.01   243.07    24.13     0.23  4532.81      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.23     1.11     5.78   477.08     1.03   467.37   464.75     9.40
 MEAN     6.16     1.10     5.70   475.49     1.03   465.40   463.73    10.14
 HUB      6.14     1.10     5.59   474.92     1.03   462.88   463.46    11.17

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     47.18    28.34    24.20     4.14     0.93     0.53     1.80
 MEAN    47.68    16.85    12.70     4.15     0.95     0.48     2.22
 HUB     51.32    -5.70    -9.30     3.60     0.95     0.35     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.967       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   365.8208   261.5152   255.8020  1050.0638     0.3484    -0.0422     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.1686     5.6781   465.0784   464.0234    10.5709    45.6327    35.4000   -10.2327

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   256.3596    62.7134   248.5705  1056.2172     0.2427     0.4696     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.1608     5.9166   470.5505   463.7760   554.9116     0.0261     0.5587

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   254.9372     0.0000   254.9372  1056.2693     0.2414     0.4501     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.8989   470.6090   463.8860     0.0000     0.0600     0.0698     0.4331
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8349     6.1396     1.0979   475.8306    14.4195   175.6598     1.3617

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  89738.500       0.614     164.832  338130.094   0.376798E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =12.864   EfDer =  0.975    SH =  0.523496E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     32.504    2123.850       6.140     475.830       1.000       1.000       0.980
 W Kg/sec =  14.774  Wdry =  32.486  WH2O = 0.017  lbm/sec   H2O =   0.286g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     74.537    2217.460       1.381       0.249      53.365      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57386.191   25498.615       2.706     590.487     218.248     468.502       2.147

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   233.24    -0.08   233.24     0.22     0.42   397.65
 MEAN   18.08     0.00    -0.02   233.24    -0.08   233.24     0.22     0.39
 HUB    15.21     0.00    -0.02   233.24    -0.08   233.24     0.22     0.35

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    58.52    46.36    12.16   380.88   446.69     5.94   471.46   464.38    13.28
 MEAN   55.16    42.30    12.86   335.06   408.32     5.94   471.46   464.38    13.28
 HUB    50.40    37.84    12.56   281.90   365.95     5.94   471.46   464.38    13.28

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   321.75   204.36   248.51  1066.67     0.30     2.33     2.04     9.02
 MEAN   18.01   324.03   205.79   250.30  1064.99     0.30     2.40     2.13     7.35
 HUB    15.22   346.24   237.13   252.29  1063.34     0.33     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   378.47   303.43   174.10     0.28  4174.74     0.92     0.89
 MEAN  333.80   281.13   128.01     0.26  3707.68     0.92     0.89     0.89     1.59
 HUB   282.14   256.27    45.01     0.24  3611.11     0.92     0.89

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.67     1.09     6.27   488.26     1.03   479.94   472.58    10.20
 MEAN    6.61     1.08     6.21   486.87     1.02   478.43   471.75    10.76
 HUB     6.60     1.08     6.14   486.58     1.02   476.95   471.66    11.35

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    39.43    35.01    31.50     3.51     0.93     0.48     1.40
 MEAN   39.43    27.09    23.50     3.59     0.94     0.47     1.63
 HUB    43.23    10.12     6.50     3.62     0.94     0.46     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.975       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   349.1423   206.3652  281.6270  1063.8708     0.3282    -0.1230     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   6.6248     6.1548   477.4464   472.0849    11.2365    36.2325    30.6000    -5.6325

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   274.5397    58.2044   268.2989  1068.0228     0.2571     0.2902     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     6.6220     6.3285   481.1819   471.8335   491.5697     0.0166     0.3980

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   284.1866     0.0000   284.1866  1067.5334     0.2662     0.2995     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.2956	480.7492	471.9128	0.0000	0.0600	0.0473	0.2124

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8562	6.6090	1.0765	487.2327	11.4030	203.9495	1.5810

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
71024.398	0.496	130.458	309125.125	0.581941E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =10.430 EfDer = 0.989 SH = 0.660620E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
32.504	2123.850	6.609	487.233	1.000	1.000	0.980

W Kg/sec = 14.774 Wdry = 32.482 WH2O = 0.021 lbm/sec H2O = 0.378g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.068	2191.360	1.380	0.249	53.370	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54642.625	25497.240	2.658	545.479	205.183	424.468	2.069

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	240.42	-0.08	240.42	0.22	0.41	383.79
MEAN	17.74	0.00	-0.02	240.42	-0.08	240.42	0.22	0.38	
HUB	15.05	0.00	-0.02	240.42	-0.08	240.42	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.13	46.36	10.77	371.98	442.98	6.38	482.59	472.04	11.14
MEAN	53.83	43.40	10.43	328.77	407.36	6.38	482.59	472.04	11.14
HUB	49.25	38.84	10.41	278.94	368.31	6.38	482.59	472.04	11.14

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	317.09	187.10	256.00	1077.95	0.29	2.26	1.98	8.75
MEAN	17.51	321.27	192.08	257.53	1076.59	0.30	2.34	2.07	6.78
HUB	14.85	345.42	228.29	259.23	1075.25	0.32	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	367.16	312.98	180.06	0.29	3708.18	0.92	0.91		
MEAN	324.47	289.56	132.39	0.27	3364.16	0.92	0.91	0.91	1.53
HUB	275.23	263.44	46.94	0.25	3391.42	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.11	1.08	6.70	498.26	1.02	490.19	478.89	8.96
MEAN	7.07	1.07	6.65	497.24	1.02	488.96	478.33	9.35
HUB	7.07	1.07	6.59	497.32	1.02	487.75	478.48	9.73

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.16	35.12	31.50	3.62	0.93	0.44	1.40
MEAN	36.72	27.21	23.50	3.71	0.94	0.43	1.62
HUB	41.37	10.26	6.50	3.76	0.94	0.44	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.989	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	348.0034	193.3425	289.3527	1075.3994	0.3236	-0.1334	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.0788	6.5899	487.8904	478.6639	9.7638	33.7504	31.5000	-2.2504

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	286.7636	62.5555	279.8574	1078.8304	0.2658	0.2194	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.0774	6.7427	491.0097	478.4434	451.3937	0.0133	0.3626

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	291.3587	0.0000	291.3587	1078.5887	0.2701	0.2696	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7217	490.7966	478.5121	0.0000	0.0600	0.0383	0.1713

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8740	7.0664	1.0692	497.6079	10.3759	213.5297	1.6553

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
64661.250	0.480	118.770	309313.969	0.729612E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.393 EfDer = 0.997 SH = 0.821724E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
32.504	2123.850	7.066	497.608	1.000	1.000	0.980

W Kg/sec = 14.774 Wdry = 32.477 WH2O = 0.027 lbm/sec H2O = 0.493g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
66.227	2168.395	1.380	0.249	53.375	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52211.523	25495.625	2.647	513.330	193.956	395.845	2.041

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	244.11	-0.08	244.11	0.23	0.40	364.44
MEAN	16.97	0.00	-0.02	244.11	-0.08	244.11	0.23	0.37	
HUB	14.32	0.00	-0.02	244.11	-0.08	244.11	0.23	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.64	46.36	9.28	356.97	432.52	6.82	492.83	478.64	9.72
MEAN	52.19	43.80	8.39	314.54	398.21	6.82	492.83	478.64	9.72
HUB	47.40	37.84	9.56	265.41	360.66	6.82	492.83	478.64	9.72

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	308.29	167.25	258.98	1087.95	0.28	2.16	1.89	8.34
MEAN	16.57	312.57	173.02	260.31	1086.78	0.29	2.24	1.97	6.35
HUB	13.89	335.57	209.93	261.79	1085.63	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	349.92	316.92	182.67	0.29	3159.37	0.92	0.91		
MEAN	307.18	292.85	134.16	0.27	2869.00	0.92	0.91	0.91	1.48
HUB	257.44	266.06	47.51	0.25	2917.15	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.52	1.06	7.12	507.00	1.02	499.38	484.17	8.18
MEAN	7.48	1.06	7.06	506.14	1.02	498.30	483.72	8.47
HUB	7.48	1.06	7.01	506.28	1.02	497.25	483.90	8.76

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.86	35.20	31.50	3.70	0.93	0.40	1.40
MEAN	33.61	27.27	23.50	3.77	0.93	0.40	1.62
HUB	38.73	10.29	6.50	3.79	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.997	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	334.3180	173.9904	285.4748	1085.9031	0.3079	-0.1076	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.4882	7.0182	497.5096	484.0155	8.7538	31.3614	32.4000	1.0386

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	288.4975	64.7016	281.1486	1088.3962	0.2651	0.1673	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4873     7.1352   499.7982   483.8500   432.2457     0.0122     0.3319

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   286.0848     0.0000   286.0848  1088.5114     0.2628     0.2397     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.1309   499.9095   483.8945     0.0000     0.0600     0.0370     0.1571

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8792     7.4767     1.0581   506.4726     8.8652   234.7666     1.8199

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  55279.379       0.451     101.537  318470.906   0.900529E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.536   EfDer =  1.000    SH =  0.100744E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     32.504    2123.850       7.477     506.472       1.000       1.000       0.980
 W Kg/sec =  14.774  Wdry =  32.471  WH2O = 0.033  lbm/sec   H2O =   0.629g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     63.148    2149.335       1.380       0.249      53.381      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50127.609   25493.766       2.756     509.668     184.963     384.739       2.080

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   236.05    -0.08   236.05     0.22     0.38   343.61
 MEAN   15.91     0.00    -0.02   236.05    -0.08   236.05     0.22     0.35
 HUB    13.07     0.00    -0.02   236.05    -0.08   236.05     0.22     0.31

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    55.20    47.36     7.84   339.54   413.60     7.24   502.01   484.02     8.81
 MEAN   51.34    44.80     6.54   294.93   377.82     7.24   502.01   484.02     8.81
 HUB    45.75    38.84     6.91   242.24   338.29     7.24   502.01   484.02     8.81

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   294.42   154.13   250.85  1096.98     0.27     2.05     1.78     7.43
 MEAN   15.50   296.70   156.34   252.17  1095.76     0.27     2.13     1.86     5.75
 HUB    12.59   315.16   187.12   253.59  1094.57     0.29     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   332.50   307.80   178.37     0.28  2766.64     0.92     0.91
 MEAN  287.23   284.12   130.90     0.26  2424.13     0.92     0.91     0.91     1.46
 HUB   233.34   257.77    46.22     0.24  2356.93     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     7.89     1.05     7.51   514.69     1.02   507.74   488.67     7.66
 MEAN    7.84     1.05     7.45   513.67     1.01   506.62   488.16     7.94
 HUB     7.83     1.05     7.39   513.48     1.01   505.51   488.13     8.21

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    31.57    35.41    31.50     3.91     0.93     0.39     1.40
 MEAN   31.80    27.43    23.50     3.93     0.93     0.37     1.64
 HUB    36.42    10.33     6.50     3.83     0.93     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   328.1992   159.2029   287.0003  1094.3400     0.2999    -0.1961     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.8419    7.3740   505.3148   488.4469     8.3167    29.0177    33.0000     3.9823
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   295.0388    67.3724   287.2435  1096.1312     0.2692     0.0204     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     7.8391     7.4595   506.9713   488.3180   410.5396     0.0270     0.3010

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   287.0033     0.0000   287.0033  1096.5316     0.2617     0.2134     0.5109

Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     7.4738   507.3462   488.3485     0.0000     0.0600     0.0420     0.0564

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.8743     7.8332     1.0477   513.9473     7.4751   261.2956     2.0255

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  46641.816       0.422      85.672  335748.313   0.109649E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1139   Tt4 =   513.9473   T1  =   461.4120

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    327345.34    601.2687     80.5820      1.4007      0.8545     13.9123      1.1139     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 25666 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.080   EfDer =  0.995    SH =  0.342180E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     41.014    1953.041       6.513     472.322       1.000       1.000       0.980
  W Kg/sec =  18.643  Wdry =  41.000  WH2O = 0.014  lbm/sec   H2O =   0.201g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     88.335    2046.675       1.381       0.249      53.359      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  67255.000   32177.367       3.215     831.557     258.626     619.754       2.396

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
  TIP     20.63     0.00    -0.02   194.11    -0.07   194.11     0.18     0.38   368.45
  MEAN    17.06     0.00    -0.02   194.11    -0.07   194.11     0.18     0.33
  HUB     12.51     0.00    -0.02   194.11    -0.07   194.11     0.18     0.27

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
  TIP     61.10    50.47    10.63   351.61   401.69     6.36   469.30   461.97    10.25
  MEAN    56.28    47.20     9.08   290.76   349.66     6.36   469.30   461.97    10.25
  HUB     47.69    38.62     9.07   213.21   288.39     6.36   469.30   461.97    10.25

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
  TIP     20.63   337.85   208.89   265.53  1061.12      0.32     7.29     6.52    16.04
  MEAN    18.04   350.56   226.75   267.35  1059.66      0.33     7.43     6.80    12.53
  HUB     15.00   391.35   282.88   270.43  1057.41      0.37     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
  TIP    351.61   301.46   142.72     0.28  4310.70      0.92     0.91
  MEAN   307.40   279.25    80.65     0.26  4090.83      0.92     0.91     0.91     1.41
  HUB    255.65   271.80    27.22     0.26  4243.98      0.92     0.91

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
  TIP       7.07     1.09     6.59   484.13     1.02   474.96   470.43    10.12
  MEAN      7.04     1.08     6.53   483.52     1.02   473.65   470.09    10.62
  HUB       7.06     1.08     6.43   483.94     1.02   471.64   470.52    11.42

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
  TIP     38.19    28.26    24.20     4.06     0.93     0.39     1.80
  MEAN    40.30    16.79    12.70     4.09     0.93     0.35     2.22
  HUB     46.29    -5.75    -9.30     3.55     0.93     0.23     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.995       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   365.4524   226.3109   286.9474  1059.0752     0.3451    -0.0599     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     7.0486     6.4983   473.1380   470.4045    11.0908    38.2623    35.4000    -2.8623

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   289.8214    70.8991   281.0155  1063.5159     0.2725     0.3335     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     7.0461     6.6964   477.1183   470.1959   554.9116     0.0146     0.4341

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   287.7052     0.0000   287.7052  1063.6150     0.2705     0.3460     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     6.6887   477.2167   470.3002     0.0000     0.0600     0.0394     0.3192
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8758     7.0328     1.0798   483.8639    11.5424   201.2482     1.5601

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  71866.430       0.581     166.568  420407.688   0.476328E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.238   EfDer =  1.000    SH =  0.611441E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     41.014    1953.041       7.033     483.864       1.000       1.000       0.980
 W Kg/sec =  18.643  Wdry =  40.989  WH2O = 0.025  lbm/sec   H2O =   0.373g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.799    2022.124       1.381       0.249      53.368      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64678.055   32173.967       2.435     590.487     242.457     468.502       1.932

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   262.88    -0.09   262.88     0.25     0.41   362.62
 MEAN   18.08     0.00    -0.02   262.88    -0.09   262.88     0.25     0.38
 HUB    15.21     0.00    -0.02   262.88    -0.09   262.88     0.25     0.35

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    53.12    46.36     6.76   350.24   437.99     6.74   478.32   470.72    13.06
 MEAN   49.54    42.30     7.24   308.12   405.09     6.74   478.32   470.72    13.06
 HUB    44.61    37.84     6.77   259.23   369.26     6.74   478.32   470.72    13.06

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   320.22   149.42   283.22  1071.10     0.30     2.33     2.04     9.02
 MEAN   18.01   326.87   161.29   284.30  1070.28     0.31     2.40     2.13     7.35
 HUB    15.22   353.40   208.22   285.55  1069.47     0.33     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   348.03   345.92   198.61     0.32  3052.96     0.92     0.91
 MEAN  306.95   319.44   145.66     0.30  2906.53     0.92     0.91     0.91     1.38
 HUB   259.45   290.11    51.24     0.27  3171.08     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     7.44     1.06     7.00   492.22     1.02   483.99   476.17    11.09
 MEAN    7.42     1.06     6.96   491.82     1.02   483.24   475.95    11.39
 HUB     7.46     1.06     6.92   492.54     1.02   482.51   476.51    11.67

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    27.81    35.04    31.50     3.54     0.93     0.33     1.40
 MEAN   29.57    27.13    23.50     3.63     0.93     0.33     1.63
 HUB    36.10    10.17     6.50     3.67     0.93     0.36     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       1.000       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   359.0593   161.7465  320.5645  1068.7174     0.3360    -0.1646     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   7.4380     6.8862   481.8437   476.3370    12.0332    26.7740    30.6000     3.8260

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   314.8015   66.7402  307.6455  1071.3690     0.2938     0.0940     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     7.4356     7.0088   484.2371   476.1564   491.5697     0.0150     0.2535

   VANED DIFFUSER EXIT:
  R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   326.0359     0.0000   326.0359  1070.7240     0.3045     0.1457     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9666	483.6595	476.2452	0.0000	0.0600	0.0416	0.0058

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8709	7.4229	1.0555	492.1900	8.3267	251.9809	1.9533

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
51883.652	0.428	120.253	387527.969	0.663734E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.329 EfDer = 0.994 SH = 0.729517E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
41.014	1953.041	7.423	492.190	1.000	1.000	0.980

W Kg/sec = 18.643 Wdry = 40.984 WH2O = 0.030 lbm/sec H2O = 0.461g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
79.120	2004.948	1.380	0.249	53.372	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62481.402	32172.475	2.354	545.479	231.705	424.468	1.832

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	274.90	-0.09	274.90	0.26	0.41	351.14
MEAN	17.74	0.00	-0.02	274.90	-0.09	274.90	0.26	0.38	
HUB	15.05	0.00	-0.02	274.90	-0.09	274.90	0.26	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.22	46.36	4.86	342.06	438.91	7.10	486.13	476.27	11.79
MEAN	47.73	43.40	4.33	302.33	408.69	7.10	486.13	476.27	11.79
HUB	43.03	38.84	4.19	256.50	376.05	7.10	486.13	476.27	11.79

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	323.13	128.30	296.57	1078.55	0.30	2.26	1.98	8.75
MEAN	17.51	330.62	144.82	297.22	1078.10	0.31	2.34	2.07	6.78
HUB	14.85	358.05	198.39	298.06	1077.66	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	337.63	363.00	209.33	0.34	2543.61	0.92	0.91		
MEAN	298.37	334.54	153.56	0.31	2536.93	0.92	0.91	0.91	1.32
HUB	253.10	303.04	54.70	0.28	2947.55	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.78	1.05	7.31	499.15	1.01	490.77	480.63	10.42
MEAN	7.77	1.05	7.29	499.13	1.01	490.36	480.65	10.56
HUB	7.83	1.06	7.26	500.25	1.02	489.97	481.42	10.69

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	23.39	35.22	31.50	3.72	0.93	0.28	1.40
MEAN	25.98	27.32	23.50	3.82	0.92	0.29	1.62
HUB	33.65	10.40	6.50	3.90	0.92	0.33	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	365.1683	145.7675	334.8130	1076.3820	0.3393	-0.1772	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.7887	7.2002	488.8108	481.0508	11.1963	23.5269	31.5000	7.9731

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	334.4847	72.9656	326.4292	1078.2778	0.3102	-0.0016	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.7832	7.2875	490.5329	480.9088	451.3937	0.0209	0.2116

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	340.3156	0.0000	340.3156	1077.9268	0.3157	0.0902	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.2532	490.2175	480.9674	0.0000	0.0600	0.0575	-0.0694

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8395	7.7647	1.0461	499.5078	7.3181	272.7612	2.1144

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
45618.555	0.400	105.732	390251.938	0.785547E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 1.743 EfDer = 0.973 SH = 0.856501E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
41.014	1953.041	7.765	499.508	1.000	1.000	0.980

W Kg/sec = 18.643 Wdry = 40.979 WH2O = 0.035 lbm/sec H2O = 0.557g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
76.197	1990.207	1.380	0.249	53.376	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60724.617	32170.867	2.300	513.330	223.163	395.845	1.774

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	283.91	-0.10	283.91	0.26	0.40	334.49
MEAN	16.97	0.00	-0.02	283.91	-0.10	283.91	0.26	0.37	
HUB	14.32	0.00	-0.02	283.91	-0.10	283.91	0.26	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.15	46.36	2.79	328.26	434.07	7.41	493.04	480.95	10.90
MEAN	45.54	43.80	1.74	289.24	405.36	7.41	493.04	480.95	10.90
HUB	40.70	37.84	2.86	244.06	374.46	7.41	493.04	480.95	10.90

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	323.12	105.00	305.58	1084.86	0.30	2.16	1.89	8.34
MEAN	16.57	329.94	123.60	305.91	1084.66	0.30	2.24	1.97	6.35
HUB	13.89	355.46	180.06	306.47	1084.48	0.33	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	321.78	374.66	216.78	0.35	1984.32	0.92	0.89		
MEAN	282.48	344.71	158.88	0.32	2050.21	0.92	0.89	0.89	1.26
HUB	236.73	311.67	56.67	0.29	2502.48	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.04	1.04	7.57	504.93	1.01	496.56	484.24	10.01
MEAN	8.05	1.04	7.56	505.11	1.01	496.38	484.37	10.06
HUB	8.11	1.04	7.54	506.35	1.01	496.22	485.18	10.11

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	18.96	35.35	31.50	3.85	0.93	0.22	1.40
MEAN	22.00	27.45	23.50	3.95	0.91	0.24	1.62
HUB	30.44	10.48	6.50	3.98	0.91	0.29	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.973	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	358.5332	124.2963	336.2982	1083.3134	0.3310	-0.1447	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0632	7.4820	495.1564	484.7242	10.5341	20.2844	32.4000	12.1156

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	342.7377	76.8660	334.0071	1084.2859	0.3161	-0.0636	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.0535	7.5218	496.0447	484.6446	432.2457	0.0289	0.1753

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	340.5098	0.0000	340.5098	1084.4166	0.3140	0.0366	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.5033	496.1669	484.6472	0.0000	0.0600	0.0815	-0.0997

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7693	8.0265	1.0337	505.4637	5.9562	313.7013	2.4318

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
37145.453	0.359	86.094	404292.250	0.915382E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-0.656 EfDer = 0.939 SH = 0.992727E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
41.014	1953.041	8.027	505.464	1.000	1.000	0.980

W Kg/sec = 18.643 Wdry = 40.973 WH2O = 0.041 lbm/sec H2O = 0.661g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
74.150	1978.447	1.380	0.249	53.380	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
59363.680	32169.146	2.347	509.668	217.188	384.739	1.771

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	279.54	-0.10	279.54	0.26	0.39	316.29
MEAN	15.91	0.00	-0.02	279.54	-0.10	279.54	0.26	0.36	
HUB	13.07	0.00	-0.02	279.54	-0.10	279.54	0.26	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	48.17	47.36	0.81	312.24	419.16	7.67	499.20	484.60	10.26
MEAN	44.14	44.80	-0.66	271.21	389.55	7.67	499.20	484.60	10.26
HUB	38.56	38.84	-0.28	222.76	357.50	7.67	499.20	484.60	10.26

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	314.63	89.73	301.57	1090.68	0.29	2.05	1.78	7.43
MEAN	15.50	319.94	105.98	301.88	1090.48	0.29	2.13	1.86	5.75
HUB	12.59	341.30	158.15	302.45	1090.28	0.31	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	305.76	370.96	216.03	0.34	1611.54	0.92	0.86		
MEAN	264.13	340.80	158.15	0.31	1644.00	0.92	0.86	0.86	1.23
HUB	214.58	307.67	56.43	0.28	1992.39	0.92	0.86		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.25	1.03	7.79	509.87	1.01	501.93	487.21	9.66
MEAN	8.25	1.03	7.78	509.96	1.01	501.75	487.28	9.72
HUB	8.30	1.03	7.76	510.91	1.01	501.57	487.89	9.76

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	16.57	35.62	31.50	4.12	0.93	0.19	1.40
MEAN	19.34	27.65	23.50	4.15	0.90	0.21	1.64
HUB	27.61	10.57	6.50	4.07	0.90	0.25	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.939	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	361.4062	107.9253	344.9153	1088.3212	0.3321	-0.2495	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2562	7.6574	499.7746	487.6631	10.3958	17.3751	33.0000	15.6249

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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   358.3401    81.8273   348.8723  1088.5165     0.3292    -0.2755     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     8.2295     7.6424   499.9515   487.6195   410.5396     0.0746     0.1434

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   348.6070     0.0000   348.6070  1089.1161     0.3201     0.0033     0.5109

Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     7.6593   500.5032   487.5972     0.0000     0.0600     0.1048    -0.2410

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.6771     8.2148     1.0235   510.2430     4.7794   365.7110     2.8350

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  29820.438       0.319      69.116  428339.313   0.105550E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0803   Tt4 =   510.2430   T1  =   472.3221

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    236334.52    547.7629     88.3348      1.2613      0.8226      9.0799      1.0803     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 20047 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.449   EfDer =  0.998    SH =  0.542941E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     50.820    1794.389       7.939     487.554       1.000       1.000       0.980
  W Kg/sec =  23.100  Wdry =  50.793  WH2O = 0.028  lbm/sec   H2O =   0.376g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     91.228    1850.813       1.381       0.249      53.366      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  70660.625   39867.703       3.113     831.557     267.138     619.754       2.320

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   203.94    -0.07   203.94     0.19     0.36   333.19
 MEAN    17.06     0.00    -0.02   203.94    -0.07   203.94     0.19     0.31
 HUB     12.51     0.00    -0.02   203.94    -0.07   203.94     0.19     0.26

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.74    50.47     7.27   323.05   382.09     7.74   484.22   473.62    10.37
 MEAN    52.65    47.20     5.45   267.14   336.15     7.74   484.22   473.62    10.37
 HUB     43.86    38.62     5.24   195.89   282.83     7.74   484.22   473.62    10.37

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.83   171.26   281.87  1075.19      0.31     7.29     6.52    16.04
 MEAN    18.04   344.71   196.74   283.05  1074.34      0.32     7.43     6.80    12.53
 HUB     15.00   388.51   263.34   285.64  1072.61      0.36     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    323.05   320.14   151.78     0.30  3534.65      0.92     0.91
 MEAN   282.43   295.74    85.69     0.28  3549.61      0.92     0.91     0.91     1.27
 HUB    234.88   287.05    28.46     0.27  3951.01      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.43     1.06     7.90   496.44     1.02   487.71   479.78    10.65
 MEAN     8.43     1.06     7.86   496.48     1.02   486.94   479.87    10.93
 HUB      8.49     1.07     7.76   497.49     1.02   485.37   480.68    11.52

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.28    28.30    24.20     4.10     0.93     0.29     1.80
 MEAN    34.80    16.84    12.70     4.14     0.92     0.26     2.22
 HUB     42.67    -5.69    -9.30     3.61     0.92     0.15     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.998       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   361.8792   196.3583   303.9736  1073.6146     0.3371    -0.0742     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     8.4436     7.8133   486.2925   480.1810    11.3960    32.8613    35.4000     2.5387

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   309.0550    75.6043   299.6648  1076.7456     0.2870     0.2247     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     8.4412     7.9781   489.1367   479.9964   554.9116     0.0140     0.3464

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   306.7444     0.0000   306.7444  1076.8635     0.2848     0.2495     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     7.9706   489.2512   480.0911     0.0000     0.0600     0.0388     0.2124
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8718     8.4261     1.0613   496.8008     9.2467   223.6732     1.7339

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57622.586       0.552     165.487  509240.844   0.693042E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.016   EfDer =  0.986    SH =  0.835903E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     50.820    1794.389       8.426     496.801       1.000       1.000       0.980
 W Kg/sec =  23.100  Wdry =  50.778  WH2O = 0.042  lbm/sec   H2O =   0.594g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     86.769    1833.511       1.380       0.249      53.375      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68910.070   39863.113       2.324     590.487     254.123     468.502       1.844

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   280.08    -0.10   280.08     0.26     0.40   328.80
 MEAN    18.08     0.00    -0.02   280.08    -0.10   280.08     0.26     0.37
 HUB     15.21     0.00    -0.02   280.08    -0.10   280.08     0.26     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     48.97    46.36     2.61   321.79   426.68     8.05   490.51   480.47    12.80
 MEAN    45.32    42.30     3.02   283.09   398.29     8.05   490.51   480.47    12.80
 HUB     40.39    37.84     2.55   238.17   367.72     8.05   490.51   480.47    12.80

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   322.85   104.92   305.33  1081.86      0.30     2.33     2.04     9.02
 MEAN    18.01   330.06   124.77   305.57  1081.73      0.31     2.40     2.13     7.35
 HUB     15.22   356.50   182.84   306.04  1081.61      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    319.76   373.34   214.84     0.35  2144.40      0.92     0.90
 MEAN   282.02   343.66   157.25     0.32  2248.81      0.92     0.90     0.90     1.25
 HUB    238.38   311.04    55.54     0.29  2784.82      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.73     1.04     8.21   502.19     1.01   493.83   483.87    11.79
 MEAN     8.74     1.04     8.20   502.45     1.01   493.71   484.06    11.83
 HUB      8.82     1.05     8.19   503.79     1.01   493.60   484.96    11.86

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     18.96    35.13    31.50     3.63     0.93     0.21     1.40
 MEAN    22.21    27.23    23.50     3.73     0.91     0.23     1.63
 HUB     30.86    10.29     6.50     3.79     0.91     0.28     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.986       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   367.0581   125.1181   345.0756  1079.8490     0.3399    -0.1951     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.7591     8.0948   492.0063   484.4808    12.5806    19.9297    30.6000    10.6703

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   340.8462    72.2618   333.0981  1081.4829     0.3152    -0.0482     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.7499     8.1755   493.4941   484.3387   491.5697     0.0264     0.1587

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   353.6906     0.0000   353.6906  1080.6954     0.3273     0.0205     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1085	492.7791	484.4313	0.0000	0.0600	0.0724	-0.1674

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7948	8.7240	1.0354	502.8094	6.0089	305.0031	2.3644

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
37474.766	0.367	107.624	472324.219	0.889674E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =-0.359 EfDer = 0.944 SH = 0.954542E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
50.820	1794.389	8.724	502.809	1.000	1.000	0.980

W Kg/sec = 23.100 Wdry = 50.772 WH2O = 0.049 lbm/sec H2O = 0.691g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
84.311	1822.523	1.380	0.249	53.379	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
67629.586	39861.254	2.209	545.479	246.947	424.468	1.719

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	297.56	-0.10	297.56	0.27	0.40	319.19
MEAN	17.74	0.00	-0.02	297.56	-0.10	297.56	0.27	0.38	
HUB	15.05	0.00	-0.02	297.56	-0.10	297.56	0.27	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	46.57	46.36	0.21	314.28	432.87	8.28	495.71	484.35	12.22
MEAN	43.04	43.40	-0.36	277.77	407.12	8.28	495.71	484.35	12.22
HUB	38.39	38.84	-0.45	235.67	379.64	8.28	495.71	484.35	12.22

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	334.89	79.56	325.31	1086.15	0.31	2.26	1.98	8.75
MEAN	17.51	341.61	105.23	325.00	1086.48	0.31	2.34	2.07	6.78
HUB	14.85	367.74	172.00	325.04	1086.81	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	310.20	398.77	230.64	0.37	1578.16	0.92	0.86		
MEAN	274.13	366.27	168.91	0.34	1844.03	0.92	0.86	0.86	1.19
HUB	232.54	330.63	60.53	0.30	2555.77	0.92	0.86		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.94	1.02	8.38	506.77	1.01	497.78	486.83	11.70
MEAN	8.98	1.03	8.39	507.44	1.01	498.08	487.23	11.58
HUB	9.08	1.04	8.40	509.23	1.01	498.38	488.36	11.45

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	13.74	35.34	31.50	3.84	0.93	0.14	1.40
MEAN	17.94	27.46	23.50	3.96	0.90	0.18	1.62
HUB	27.89	10.55	6.50	4.05	0.90	0.25	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.944	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	381.8990	105.9202	366.9165	1084.3282	0.3522	-0.2096	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.9934	8.2640	496.1217	487.6974	12.3948	16.1022	31.5000	15.3978

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	368.8958	80.4721	360.0115	1085.1864	0.3399	-0.1537	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.9758	8.2951	496.9042	487.6047	451.3937	0.0390	0.1143

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   376.3284     0.0000   376.3284  1084.6997     0.3469    -0.0438     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2320   496.4605   487.6504     0.0000     0.0600     0.1033    -0.2569

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6682     8.9365     1.0244   507.8116     5.0022   346.5993     2.6868

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  31208.926       0.324      89.629  478236.031   0.100794E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =-3.446   EfDer =  0.884    SH =  0.107327E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     50.820    1794.389       8.936     507.811       1.000       1.000       0.980
 W Kg/sec =  23.100  Wdry =  50.766  WH2O = 0.055  lbm/sec   H2O =   0.785g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.714    1813.524       1.380       0.249      53.383      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66921.813   39859.391       2.119     513.330     242.289     395.845       1.634

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   312.88    -0.11   312.88     0.29     0.40   304.80
 MEAN    16.97     0.00    -0.02   312.88    -0.11   312.88     0.29     0.38
 HUB     14.32     0.00    -0.02   312.88    -0.11   312.88     0.29     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     43.96    46.36    -2.40   301.59   434.65     8.45   499.97   487.48    11.85
 MEAN    40.35    43.80    -3.45   265.74   410.58     8.45   499.97   487.48    11.85
 HUB     35.64    37.84    -2.20   224.24   385.00     8.45   499.97   487.48    11.85

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   345.40    52.20   341.44  1089.33     0.32     2.16     1.89     8.34
 MEAN    16.57   350.31    81.46   340.71  1090.03     0.32     2.24     1.97     6.35
 HUB     13.89   373.50   153.48   340.50  1090.70     0.34     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    295.64   419.34   243.45     0.38   987.53     0.92     0.81
 MEAN   259.53   384.44   178.07     0.35  1351.86     0.92     0.81     0.81     1.13
 HUB    217.50   346.47    64.02     0.32  2133.42     0.92     0.81

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.07     1.01     8.46   510.29     1.00   500.73   489.07    11.81
 MEAN     9.11     1.02     8.49   511.20     1.01   501.37   489.58    11.56
 HUB      9.22     1.03     8.51   513.16     1.01   501.99   490.76    11.31

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      8.69    35.49    31.50     3.99     0.93     0.08     1.40
 MEAN    13.45    27.59    23.50     4.09     0.89     0.12     1.62
 HUB     24.26    10.65     6.50     4.15     0.89     0.20     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.884       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   384.2975    81.9135   375.4660  1088.2290     0.3531    -0.1722     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.1253     8.3815   499.7201   490.0020    12.2265    12.3071    32.4000    20.0929

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   385.1968    86.3884   375.3847  1088.1716     0.3540    -0.2072     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.0996     8.3545   499.6647   489.9867   432.2457     0.0499     0.0784

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   383.6946     0.0000   383.6946  1088.2726     0.3526    -0.0938     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.3117   499.7575   489.9464     0.0000     0.0600     0.1318    -0.2737

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.4594     9.0469     1.0124   511.5529     3.7413   428.5756     3.3223

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  23350.693       0.267      67.061  498208.938   0.112517E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-6.314   EfDer =  0.821    SH =  0.119229E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     50.820    1794.389       9.047     511.553       1.000       1.000       0.980
 W Kg/sec =  23.100  Wdry =  50.760  WH2O = 0.061  lbm/sec   H2O =   0.876g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.006    1806.880       1.380       0.249      53.387      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66588.977   39857.523       2.122     509.668     240.231     384.739       1.602

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   313.56    -0.11   313.56     0.29     0.39   288.86
 MEAN   15.91     0.00    -0.02   313.56    -0.11   313.56     0.29     0.37
 HUB    13.07     0.00    -0.02   313.56    -0.11   313.56     0.29     0.34

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    42.47    47.36    -4.89   286.87   425.06     8.55   503.68   489.71    11.55
 MEAN   38.49    44.80    -6.31   249.18   400.58     8.55   503.68   489.71    11.55
 HUB    33.15    38.84    -5.69   204.66   374.50     8.55   503.68   489.71    11.55

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   344.43    34.06   342.74  1092.41     0.32     2.05     1.78     7.43
 MEAN   15.50   347.62    62.27   342.00  1093.18     0.32     2.13     1.86     5.75
 HUB    12.59   366.57   132.35   341.85  1093.92     0.34     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   280.92   422.39   246.87     0.39   612.96     0.92     0.75
 MEAN  242.68   386.67   180.41     0.35   966.70     0.92     0.75     0.75     1.10
 HUB   197.15   347.93    64.80     0.32  1667.72     0.92     0.75

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     9.12     1.01     8.52   513.09     1.00   503.59   490.76    11.81
 MEAN    9.16     1.01     8.55   513.98     1.00   504.30   491.24    11.54
 HUB     9.25     1.02     8.57   515.74     1.01   504.97   492.25    11.26

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     5.67    35.76    31.50     4.26     0.93     0.03     1.40
 MEAN   10.32    27.81    23.50     4.31     0.87     0.08     1.64
 HUB    21.16    10.73     6.50     4.23     0.87     0.16     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.821       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   397.4363    63.4080   392.3456  1090.2694     0.3645    -0.2850     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.1662     8.3729   501.6172   491.7422    12.5802     9.1803    33.0000    23.8197
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   411.2380    93.9066   400.3727  1089.3030     0.3775    -0.4474     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.1073     8.2653   500.7232   491.7842   410.5396     0.1134     0.0517

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   399.8345     0.0000   399.8345  1090.1110     0.3668    -0.1026     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2916   501.4642   491.7085     0.0000     0.0600     0.1452    -0.4059

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.2308     9.0872     1.0045   514.2682     2.7152   543.5432     4.2135

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  16953.031       0.215      48.688  530332.563   0.124600E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0548   Tt4 =   514.2682   T1  =   487.5544

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    166610.00    478.4884     91.2278      1.1446      0.6913      5.4493      1.0548     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 15435 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 6.537   EfDer =  1.000    SH =  0.823303E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     49.642    1584.377       9.337     500.812       1.000       1.000       0.980
 W Kg/sec =  22.565  Wdry =  49.601  WH2O = 0.041  lbm/sec   H2O =   0.656g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.794    1612.425       1.380       0.249      53.375      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59969.203   38939.055       3.697     831.557     224.917     619.754       2.755

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   173.08    -0.06   173.08     0.16     0.31   290.28
 MEAN    17.06     0.00    -0.02   173.08    -0.06   173.08     0.16     0.27
 HUB     12.51     0.00    -0.02   173.08    -0.06   173.08     0.16     0.23

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.76    50.47     8.29   285.24   333.69     9.18   498.41   483.36    10.50
 MEAN    53.74    47.20     6.54   235.88   292.62     9.18   498.41   483.36    10.50
 HUB     44.99    38.62     6.37   172.97   244.73     9.18   498.41   483.36    10.50

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   286.20   156.41   239.67  1090.09      0.26     7.29     6.52    16.04
 MEAN    18.04   298.47   176.77   240.49  1089.37      0.27     7.43     6.80    12.53
 HUB     15.00   335.08   231.62   242.14  1088.03      0.31     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    285.24   272.10   128.83     0.25  3227.99      0.92     0.91
 MEAN   249.37   251.21    72.60     0.23  3189.28      0.92     0.91     0.91     1.31
 HUB    207.39   243.35    24.22     0.22  3475.02      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.79     1.05     9.34   507.97     1.01   501.40   488.20    10.86
 MEAN     9.78     1.05     9.29   507.88     1.01   500.74   488.21    11.09
 HUB      9.82     1.05     9.21   508.52     1.02   499.51   488.74    11.53

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.13    28.26    24.20     4.06     0.93     0.31     1.80
 MEAN    36.32    16.80    12.70     4.10     0.93     0.28     2.22
 HUB     43.73    -5.71    -9.30     3.59     0.93     0.17     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   312.4840   176.4285   257.9133  1088.8652     0.2870    -0.0698     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.7928     9.2560   500.2964   488.4541    11.4533    34.3745    35.4000     1.0255

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   263.0504    64.3502   255.0580  1091.3395     0.2410     0.2523     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.7921     9.4094   502.5770   488.2944   554.9116     0.0114     0.3666

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   261.0158     0.0000   261.0158  1091.4249     0.2392     0.2729     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.4025   502.6628   488.4116     0.0000     0.0600     0.0370     0.2389
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8769     9.7788     1.0473   508.1227     7.3110   216.8008     1.6806

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  45612.816       0.561     127.959  484956.094   0.102433E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 4.013   EfDer =  0.993    SH =  0.121576E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.642    1584.377       9.779     508.122       1.000       1.000       0.980
 W Kg/sec =  22.565  Wdry =  49.582  WH2O = 0.060  lbm/sec   H2O =   0.989g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.860    1600.783       1.380       0.249      53.388      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58761.895   38933.047       2.729     590.487     216.373     468.502       2.165

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   238.83    -0.08   238.83     0.22     0.34   287.06
 MEAN    18.08     0.00    -0.02   238.83    -0.08   238.83     0.22     0.32
 HUB     15.21     0.00    -0.02   238.83    -0.08   238.83     0.22     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.96     46.36     3.60   284.13   371.24     9.46   503.55   488.88    13.10
 MEAN    46.31     42.30     4.01   249.96   345.77     9.46   503.55   488.88    13.10
 HUB     41.38     37.84     3.54   210.30   318.28     9.46   503.55   488.88    13.10

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   279.08    99.02   260.93  1095.40      0.25     2.33     2.04     9.02
 MEAN    18.01   285.32   114.85   261.19  1095.20      0.26     2.40     2.13     7.35
 HUB     15.22   308.31   163.20   261.58  1095.01      0.28     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    282.33   318.88   183.31     0.29  2023.72      0.92     0.91
 MEAN   249.01   293.63   134.16     0.27  2069.91      0.92     0.91     0.91     1.27
 HUB    210.48   265.82    47.28     0.24  2485.60      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.07     1.03     9.63   512.60     1.01   506.37   491.63    12.32
 MEAN    10.07     1.03     9.62   512.71     1.01   506.19   491.71    12.38
 HUB     10.13     1.04     9.60   513.63     1.01   506.01   492.33    12.44

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     20.78    35.09    31.50     3.59     0.93     0.24     1.40
 MEAN    23.74    27.19    23.50     3.69     0.92     0.25     1.63
 HUB     31.96    10.25     6.50     3.75     0.92     0.29     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   315.7834   115.1715   294.0317  1093.9001     0.2887    -0.1851     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.0861     9.5270   504.9942   492.0417    12.9125    21.3902    30.6000     9.2098

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   290.7225    61.6352   284.1138  1095.2186     0.2654    -0.0157     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.0815     9.6063   506.2113   491.9185   491.5697     0.0198     0.1775

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   301.0327     0.0000   301.0327  1094.6866     0.2750     0.0458     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.5527	505.7231	492.0096	0.0000	0.0600	0.0640	-0.1282

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8202	10.0604	1.0288	512.9789	4.8564	291.4474	2.2593

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
30329.250	0.380	85.083	449351.781	0.128708E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 0.552 EfDer = 0.958 SH = 0.137285E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.642	1584.377	10.060	512.979	1.000	1.000	0.980

W Kg/sec = 22.565 Wdry = 49.574 WH2O = 0.068 lbm/sec H2O = 1.135g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.135	1593.188	1.379	0.250	53.393	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
57840.891	38930.637	2.581	545.479	211.343	424.468	2.008

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	254.49	-0.09	254.49	0.23	0.34	279.03
MEAN	17.74	0.00	-0.02	254.49	-0.09	254.49	0.23	0.32	
HUB	15.05	0.00	-0.02	254.49	-0.09	254.49	0.23	0.30	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	47.49	46.36	1.13	277.49	376.58	9.70	507.80	492.01	12.90
MEAN	43.95	43.40	0.55	245.26	353.49	9.70	507.80	492.01	12.90
HUB	39.28	38.84	0.44	208.09	328.79	9.70	507.80	492.01	12.90

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	288.70	76.83	278.29	1098.94	0.26	2.26	1.98	8.75
MEAN	17.51	294.87	97.71	278.21	1099.08	0.27	2.34	2.07	6.78
HUB	14.85	317.96	153.75	278.32	1099.22	0.29	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	273.90	341.00	197.07	0.31	1523.82	0.92	0.88		
MEAN	242.05	313.42	144.34	0.29	1712.11	0.92	0.88	0.88	1.21
HUB	205.32	283.06	51.57	0.26	2284.45	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.27	1.02	9.80	516.35	1.01	509.68	494.08	12.46
MEAN	10.30	1.02	9.80	516.77	1.01	509.81	494.33	12.40
HUB	10.38	1.03	9.80	518.03	1.01	509.94	495.13	12.34

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	15.43	35.30	31.50	3.80	0.93	0.17	1.40
MEAN	19.35	27.42	23.50	3.92	0.90	0.20	1.62
HUB	28.92	10.50	6.50	4.00	0.90	0.26	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.958	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	328.0626	98.3504	312.9733	1097.5906	0.2989	-0.1991	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3123	9.7011	508.4381	494.6931	12.9880	17.4451	31.5000	14.0549

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	314.5309	68.6128	306.9560	1098.3434	0.2864	-0.1200	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.3019	9.7397	509.1341	494.6129	451.3937	0.0302	0.1317

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   320.2190     0.0000   320.2190  1098.0294     0.2916    -0.0208     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6884   508.8453   494.6620     0.0000     0.0600     0.0943    -0.2194

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.7122    10.2688     1.0207   517.0515     4.0727   329.8331     2.5568

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  25447.469       0.339      71.388  455441.313   0.144226E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =-2.562   EfDer =  0.903    SH =  0.152706E-02

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     49.642    1584.377      10.269     517.051       1.000       1.000       0.980
 W Kg/sec =  22.565  Wdry =  49.566  WH2O = 0.076  lbm/sec   H2O =   1.275g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     70.950    1586.901       1.379       0.250      53.398      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57273.742   38928.273       2.469     513.330     207.894     395.845       1.904

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   267.77    -0.09   267.77     0.24     0.34   266.71
 MEAN    16.97     0.00    -0.02   267.77    -0.09   267.77     0.24     0.32
 HUB     14.32     0.00    -0.02   267.77    -0.09   267.77     0.24     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     44.85    46.36    -1.51   266.29   377.71     9.86   511.31   494.59    12.80
 MEAN    41.24    43.80    -2.56   234.64   356.09     9.86   511.32   494.59    12.80
 HUB     36.49    37.84    -1.35   197.99   333.08     9.86   511.31   494.59    12.80

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   296.61    53.19   291.80  1101.66     0.27     2.16     1.89     8.34
 MEAN    16.57   301.46    77.00   291.46  1102.06     0.27     2.24     1.97     6.35
 HUB     13.89   322.19   137.43   291.40  1102.45     0.29     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    261.04   358.26   207.85     0.33  1005.93     0.92     0.83
 MEAN   229.16   328.78   152.15     0.30  1277.80     0.92     0.83     0.83     1.15
 HUB    192.05   296.48    54.62     0.27  1910.24     0.92     0.83

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.40     1.01     9.90   519.28     1.00   512.24   495.98    12.69
 MEAN    10.44     1.02     9.92   519.88     1.01   512.61   496.32    12.55
 HUB     10.52     1.02     9.93   521.28     1.01   512.97   497.16    12.39

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     10.33    35.46    31.50     3.96     0.93     0.10     1.40
 MEAN    14.80    27.57    23.50     4.07     0.89     0.14     1.62
 HUB     25.25    10.62     6.50     4.12     0.89     0.21     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.903       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   329.4253    77.4360   320.1947  1100.8204     0.2993    -0.1637     2.1803

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.4494     9.8287   511.4630   496.6493    13.0327    13.5954    32.4000    18.8046

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   327.8424    73.5255   319.4912  1100.9120     0.2978    -0.1752     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4331     9.8193   511.5463   496.6337   432.2457     0.0400     0.0948

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   326.1107     0.0000   326.1107  1101.0088     0.2962    -0.0746     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.7824   511.6371   496.6114     0.0000     0.0600     0.1248    -0.2433

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.5278    10.3873     1.0115   520.1440     3.0926   403.3354     3.1266

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  19332.834       0.284      54.235  474748.969   0.159379E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-5.427   EfDer =  0.841    SH =  0.167966E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.642    1584.377      10.387     520.144       1.000       1.000       0.980
 W Kg/sec =  22.565  Wdry =  49.559  WH2O = 0.083  lbm/sec   H2O =   1.410g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     70.351    1582.177       1.379       0.250      53.403      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  56960.273   38925.930       2.472     509.668     206.157     384.739       1.866

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   268.22    -0.09   268.22     0.24     0.33   252.94
 MEAN   15.91     0.00    -0.02   268.22    -0.09   268.22     0.24     0.31
 HUB    13.07     0.00    -0.02   268.22    -0.09   268.22     0.24     0.29

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    43.37    47.36    -3.99   253.30   368.98     9.98   514.39   496.48    12.73
 MEAN   39.37    44.80    -5.43   220.02   346.97     9.98   514.39   496.48    12.73
 HUB    33.98    38.84    -4.86   180.71   323.47     9.98   514.39   496.48    12.73

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   294.92    37.52   292.52  1104.26     0.27     2.05     1.78     7.43
 MEAN   15.50   298.33    60.30   292.17  1104.70     0.27     2.13     1.86     5.75
 HUB    12.59   315.40   118.86   292.14  1105.14     0.29     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   248.04   360.40   210.53     0.33   674.76     0.92     0.77
 MEAN  214.27   330.26   153.97     0.30   936.04     0.92     0.77     0.77     1.12
 HUB   174.07   297.31    55.21     0.27  1497.72     0.92     0.77

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.47     1.01     9.97   521.64     1.00   514.68   497.46    12.83
 MEAN   10.50     1.01     9.99   522.21     1.00   515.10   497.77    12.66
 HUB    10.57     1.02    10.00   523.46     1.01   515.50   498.49    12.49

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     7.31    35.74    31.50     4.24     0.93     0.06     1.40
 MEAN   11.66    27.79    23.50     4.29     0.88     0.10     1.64
 HUB    22.14    10.70     6.50     4.20     0.88     0.17     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.841       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   339.1004    61.4099   333.4934  1102.7032     0.3075    -0.2723     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.5054     9.8480   513.2406   498.1666    13.4117    10.4336    33.0000    22.5664
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   347.8167    79.4242   338.6270  1102.1924     0.3156    -0.3972     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500    10.4665     9.7783   512.7618   498.1964   410.5396     0.0936     0.0667

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   338.7001     0.0000   338.7001  1102.7310     0.3071    -0.0896     0.5109

Blockage4   Ps4       Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     9.7891   513.2623   498.1414     0.0000     0.0600     0.1421    -0.3767

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4       Tt2avg      Del T     Ns          Ns nondim
 0.3218    10.4410     1.0052   522.4345     2.2909   503.5690     3.9036

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  14327.912       0.233      40.194  505919.219   0.174478E-02

Melt Ratio at Stator LE, Throat, TE
0.14793E-01 0.15037E-01 0.15746E-01
 trTOT =     1.0432   Tt4 =   522.4345   T1  =   500.8120

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    135050.28    378.8593     76.7937      1.1182      0.7226      6.5369      1.0432     37.3740
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10µm, ISA +36R

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*********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
*********************************************************************

       Fan Core + 4 Stage LPC 10% 39000 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.246   EfDer =  0.956    SH =  0.445243E-03

    W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
      26.253    2469.930       4.265     477.913       1.000       1.000       0.980
  W Kg/sec =  11.933  Wdry =  26.241  WH2O = 0.012  lbm/sec   H2O =   0.169g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
      86.862    2573.149       1.381       0.249      53.363      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66489.250   20595.410       3.270     831.557     254.318     619.754       2.437

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   191.90    -0.07   191.90     0.18     0.46   463.23
 MEAN    17.06     0.00    -0.02   191.90    -0.07   191.90     0.18     0.39
 HUB     12.51     0.00    -0.02   191.90    -0.07   191.90     0.18     0.31

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.66    50.47    16.19   444.66   484.36      4.17   474.95   461.74     6.80
 MEAN    62.45    47.20    15.25   367.72   414.84      4.17   474.95   461.74     6.80
 HUB     54.57    38.62    15.95   269.64   331.01      4.17   474.95   461.74     6.80

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   399.15   305.59   256.78  1074.49      0.37     7.29     6.52    16.04
 MEAN    18.04   404.31   309.48   260.18  1071.35      0.38     7.43     6.80    12.53
 HUB     15.00   438.47   349.41   264.90  1067.48      0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    444.66   292.03   139.07     0.27  6305.71      0.92     0.88
 MEAN   388.75   271.99    79.28     0.25  5582.85      0.92     0.88     0.88     1.75
 HUB    323.31   266.18    26.09     0.25  5241.95      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.92     1.15     4.47   499.75     1.05   486.95   475.02     6.13
 MEAN     4.84     1.13     4.39   497.25     1.04   484.11   473.76     6.76
 HUB      4.80     1.13     4.28   496.07     1.04   480.62   473.33     7.64

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.96    28.44    24.20     4.24     0.93     0.57     1.80
 MEAN    49.95    16.95    12.70     4.25     0.95     0.52     2.22
 HUB     52.83    -5.63    -9.30     3.67     0.95     0.38     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.956       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   416.2867   308.8750   279.0893  1070.9380     0.3887    -0.0366     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8469     4.3732   483.7738   474.1170     7.0938    47.9001    35.4000   -12.5001

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   276.9406    67.7481   268.5262  1079.4784     0.2566     0.5104     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8352     4.6217   491.5297   473.6330   554.9116     0.0350     0.6028

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   275.7862     0.0000   275.7862  1079.5156     0.2555     0.4818     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.6015	491.5814	473.8375	0.0000	0.0600	0.0840	0.4673

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8183	4.8122	1.1284	497.6864	19.7746	168.9491	1.3097

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
123162.047	0.623	182.717	266568.250	0.772750E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =14.793 EfDer = 0.960 SH = 0.114390E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.253	2469.930	4.812	497.686	1.000	1.000	0.980

W Kg/sec = 11.933 Wdry = 26.222 WH2O = 0.030 lbm/sec H2O = 0.466g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.554	2521.535	1.380	0.249	53.385	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62053.270	20589.756	2.566	590.487	230.090	468.502	2.036

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	252.20	-0.09	252.20	0.23	0.47	452.18
MEAN	18.08	0.00	-0.02	252.20	-0.09	252.20	0.23	0.43	
HUB	15.21	0.00	-0.02	252.20	-0.09	252.20	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.35	46.36	13.99	442.94	509.78	4.64	492.59	474.76	9.28
MEAN	57.09	42.30	14.79	389.66	464.23	4.64	492.59	474.76	9.28
HUB	52.44	37.84	14.60	327.84	413.69	4.64	492.59	474.76	9.28

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	367.18	253.67	265.46	1093.83	0.34	2.33	2.04	9.02
MEAN	18.01	367.07	250.67	268.15	1091.35	0.34	2.40	2.13	7.35
HUB	15.22	389.35	279.43	271.14	1088.90	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	440.14	324.41	186.47	0.30	5181.63	0.92	0.88		
MEAN	388.19	301.36	137.52	0.28	4516.06	0.92	0.88	0.88	1.70
HUB	328.12	275.47	48.69	0.25	4255.10	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.39	1.12	4.99	515.59	1.04	504.78	484.18	6.57
MEAN	5.31	1.10	4.92	513.29	1.03	502.49	483.11	7.06
HUB	5.28	1.10	4.84	512.39	1.03	500.24	482.84	7.59

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	43.70	35.09	31.50	3.59	0.93	0.54	1.40
MEAN	43.07	27.15	23.50	3.65	0.95	0.52	1.63
HUB	45.86	10.18	6.50	3.68	0.95	0.51	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.960	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	392.8447	251.3700	301.8942	1090.1259	0.3604	-0.1085	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3227	4.8719	501.3894	483.5150	7.3765	39.7822	30.6000	-9.1822

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	292.0391	61.9144	285.4005	1096.1195	0.2664	0.3619	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.3167	5.0643	506.9218	482.9950	491.5697	0.0246	0.4589

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	302.7122	0.0000	302.7122	1095.5566	0.2763	0.3519	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0305	506.4135	483.1243	0.0000	0.0600	0.0638	0.2799

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8351	5.3006	1.1015	513.7553	16.0700	190.4094	1.4760

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
100284.547	0.518	148.777	242152.328	0.129402E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.812 EfDer = 0.975 SH = 0.149847E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.253	2469.930	5.301	513.755	1.000	1.000	0.980

W Kg/sec = 11.933 Wdry = 26.213 WH2O = 0.039 lbm/sec H2O = 0.651g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.457	2481.788	1.379	0.250	53.397	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
58162.883	20586.879	2.570	545.479	212.287	424.468	2.000

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	255.90	-0.09	255.90	0.23	0.46	434.66
MEAN	17.74	0.00	-0.02	255.90	-0.09	255.90	0.23	0.42	
HUB	15.05	0.00	-0.02	255.90	-0.09	255.90	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.40	46.36	13.04	432.59	502.69	5.11	508.51	483.39	7.22
MEAN	56.21	43.40	12.81	382.34	460.15	5.11	508.51	483.39	7.22
HUB	51.74	38.84	12.90	324.39	413.25	5.11	508.51	483.39	7.22

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	358.95	237.30	269.32	1109.76	0.32	2.26	1.98	8.75
MEAN	17.51	360.86	237.50	271.68	1107.63	0.33	2.34	2.07	6.78
HUB	14.85	385.10	270.31	274.29	1105.55	0.35	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	426.99	329.42	189.69	0.30	4702.59	0.92	0.89		
MEAN	377.34	305.56	139.84	0.28	4159.41	0.92	0.89	0.89	1.65
HUB	320.08	278.77	49.77	0.25	4015.44	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.86	1.11	5.46	529.98	1.03	519.67	491.32	5.43
MEAN	5.80	1.09	5.39	528.11	1.03	517.68	490.53	5.75
HUB	5.78	1.09	5.32	527.61	1.03	515.74	490.47	6.09

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.38	35.16	31.50	3.66	0.93	0.51	1.40
MEAN	41.16	27.24	23.50	3.74	0.94	0.49	1.62
HUB	44.58	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.975	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	387.8134	239.0609	305.3671	1106.3734	0.3505	-0.1164	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.8092	5.3424	516.5319	490.9244	5.9997	38.0561	31.5000	-6.5561

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	300.4559	65.5424	293.2200	1111.5109	0.2703	0.3107	2.3726

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8053     5.5219   521.3440   490.4623   451.3937     0.0191     0.4339

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   305.5421     0.0000   305.5421  1111.2351     0.2750     0.3369     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.4996   521.0978   490.5746     0.0000     0.0600     0.0510     0.2581

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8555     5.7918     1.0927   528.5681    14.8135   195.7673     1.5176

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  92559.828       0.508     137.317  240673.438   0.167903E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =11.229   EfDer =  0.985    SH =  0.192205E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.253    2469.930       5.792     528.568       1.000       1.000       0.980
 W Kg/sec =  11.933  Wdry =  26.202  WH2O = 0.050  lbm/sec   H2O =   0.888g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     67.261    2446.766       1.379       0.250      53.411      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  54737.297   20583.441       2.604     513.330     197.117     395.845       2.008

ROTOR LEADING EDGE CONDITIONS, STAGE   4

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    19.26     0.00    -0.02   255.91    -0.09   255.91     0.23     0.44   411.23
 MEAN   16.97     0.00    -0.02   255.91    -0.09   255.91     0.23     0.40
 HUB    14.32     0.00    -0.02   255.91    -0.09   255.91     0.23     0.36

      BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP    58.35    46.36    11.99   415.13   487.75     5.59   523.33   490.84     5.92
 MEAN   55.03    43.80    11.23   365.79   446.49     5.59   523.33   490.84     5.92
 HUB    50.35    37.84    12.51   308.66   401.02     5.59   523.33   490.84     5.92

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    18.88   345.57   217.49   268.54  1123.99     0.31     2.16     1.89     8.34
 MEAN   16.57   347.40   217.77   270.67  1122.07     0.31     2.24     1.97     6.35
 HUB    13.89   370.12   249.92   272.99  1120.19     0.33     2.26     2.10     4.19

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   406.94   328.65   189.45     0.29  4107.90     0.92     0.90
 MEAN  357.24   304.49   139.47     0.27  3610.81     0.92     0.90     0.90     1.61
 HUB   299.39   277.44    49.46     0.25  3472.70     0.92     0.90

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.32     1.09     5.92   542.72     1.03   533.18   497.36     4.71
 MEAN    6.25     1.08     5.86   541.01     1.02   531.36   496.68     4.95
 HUB     6.23     1.08     5.79   540.54     1.02   529.58   496.64     5.20

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    39.00    35.20    31.50     3.70     0.93     0.48     1.40
 MEAN   38.82    27.26    23.50     3.76     0.94     0.47     1.62
 HUB    42.47    10.27     6.50     3.77     0.94     0.47     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.985       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   368.8883   218.9958   296.8492  1121.1815     0.3290    -0.0921     2.1803

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.2634     5.8174   530.5490   497.0092     5.1019    36.4175    32.4000    -4.0175
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   298.0639    66.8470   290.4713  1125.1581     0.2649     0.2738     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2614     5.9676   534.3242   496.6453   432.2457     0.0148     0.4125

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   295.6942     0.0000   295.6942  1125.2633     0.2628     0.3230     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9615   534.4364   496.7211     0.0000     0.0600     0.0421     0.2589

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8689     6.2501     1.0791   541.4225    12.8559   210.9852     1.6355

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  80444.711       0.486     119.344  246274.500   0.212805E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.13875E-02 0.14485E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.779   EfDer =  0.992    SH =  0.238938E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.253    2469.930       6.250     541.422       1.000       1.000       0.980
 W Kg/sec =  11.933  Wdry =  26.190  WH2O = 0.063  lbm/sec   H2O =   1.166g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     63.082    2417.546       1.378       0.250      53.426      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  51817.965   20579.645       2.756     509.668     184.927     384.739       2.080

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   244.00    -0.08   244.00     0.22     0.41   386.49
 MEAN    15.91     0.00    -0.02   244.00    -0.08   244.00     0.22     0.37
 HUB     13.07     0.00    -0.02   244.00    -0.08   244.00     0.22     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.29    47.36    10.93   394.87   464.25     6.05   536.67   496.95     5.07
 MEAN    54.58    44.80     9.78   342.99   421.00     6.05   536.67   496.95     5.07
 HUB     49.11    38.84    10.27   281.71   372.76     6.05   536.67   496.95     5.07

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   328.10   204.39   256.65  1136.74      0.29     2.05     1.78     7.43
 MEAN    15.50   327.01   199.98   258.73  1134.76      0.29     2.13     1.86     5.75
 HUB     12.59   343.91   224.02   260.94  1132.81      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    386.68   314.80   182.29     0.28  3668.34      0.92     0.91
 MEAN   334.04   291.39   134.06     0.26  3100.61      0.92     0.91     0.91     1.60
 HUB    271.37   265.20    47.35     0.23  2821.47      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.75     1.08     6.37   554.04     1.02   545.45   502.48     4.16
 MEAN     6.67     1.07     6.30   552.09     1.02   543.55   501.73     4.37
 HUB      6.63     1.06     6.22   551.13     1.02   541.69   501.46     4.59

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.53    35.38    31.50     3.88     0.93     0.48     1.40
 MEAN    37.70    27.39    23.50     3.89     0.94     0.45     1.64
 HUB     40.65    10.29     6.50     3.79     0.94     0.44     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.992       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   358.0349   203.6507   294.4748  1133.3076     0.3159    -0.1720     2.0437
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    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6731     6.2336   542.1899   502.0566     4.5533    34.6667    33.0000    -1.6667

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   300.9044    68.7118   292.9542  1136.4375     0.2648     0.1560     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6711     6.3584   545.1926   501.7478   410.5396     0.0254     0.3882

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   292.7007     0.0000   292.7007  1136.8260     0.2575     0.3116     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3706   545.5765   501.7802     0.0000     0.0600     0.0376     0.1881

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8790     6.6664     1.0666   552.4117    10.9982   230.5111     1.7869

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  68924.781       0.461     102.254  258253.188   0.257040E-02

Melt Ratio at Stator LE, Throat, TE
0.11292E+00 0.13291E+00 0.19475E+00
 trTOT =     1.1559   Tt4 =   552.4117   T1  =   477.9130

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    465375.94    690.4097     86.8619      1.5632      0.8383     15.2459      1.1559     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 38334 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.343   EfDer =  0.956    SH =  0.406892E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.295    2391.942       4.199     471.469       1.000       1.000       0.980
  W Kg/sec =  11.498  Wdry =  25.285  WH2O = 0.010  lbm/sec   H2O =   0.155g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     84.424    2508.875       1.381       0.249      53.361      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64124.238   19844.852       3.364     831.557     247.172     619.754       2.507

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   185.07    -0.06   185.07     0.18     0.44   451.66
 MEAN    17.06     0.00    -0.02   185.07    -0.06   185.07     0.18     0.38
 HUB     12.51     0.00    -0.02   185.07    -0.06   185.07     0.18     0.30

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.75    50.47    16.28   430.62   468.77     4.11   468.72   457.91     8.08
 MEAN    62.54    47.20    15.34   356.11   401.38     4.11   468.72   457.91     8.08
 HUB     54.68    38.62    16.06   261.13   320.11     4.11   468.72   457.91     8.08

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   386.47   296.19   248.25  1066.77      0.36     7.29     6.52    16.04
 MEAN    18.04   391.30   299.89   251.36  1063.81      0.37     7.43     6.80    12.53
 HUB     15.00   424.03   338.27   255.67  1060.17      0.40     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    430.62   282.31   134.43     0.26  6111.73      0.92     0.87
 MEAN   376.48   262.77    76.58     0.25  5409.96      0.92     0.87     0.87     1.75
 HUB    313.10   256.91    25.17     0.24  5074.91      0.92     0.87

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP       4.81     1.14     4.40   491.97     1.04   479.97   470.99     7.25
 MEAN      4.73     1.13     4.32   489.62     1.04   477.31   469.73     7.98
 HUB       4.70     1.12     4.22   488.49     1.04   474.05   469.28     8.98

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.03    28.44    24.20     4.24     0.93     0.57     1.80
 MEAN    50.03    16.95    12.70     4.25     0.95     0.52     2.22
 HUB     52.92    -5.62    -9.30     3.68     0.95     0.39     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.956       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   402.8125   299.3102   269.5762  1063.4277     0.3788    -0.0366     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.7428     4.3012   476.9947   470.0779     8.3533    47.9920    35.4000   -12.5919

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   268.0155    65.5648   259.8723  1071.4825     0.2501     0.5113     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.7321     4.5332   484.2565   469.6273   554.9116     0.0343     0.6031

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   266.8700     0.0000   266.8700  1071.5186     0.2491     0.4815     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.5138   484.3062   469.8202     0.0000     0.0600     0.0846     0.4670
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8172     4.7101     1.1217   490.0243    18.5562   168.5572     1.3066

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 115546.492       0.623     165.170  259255.203   0.689339E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.807   EfDer =  0.960    SH =  0.100984E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.295    2391.942       4.710     490.024       1.000       1.000       0.980
 W Kg/sec =  11.498  Wdry =  25.270  WH2O = 0.026  lbm/sec   H2O =   0.410g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.732    2460.934       1.380       0.249      53.381      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60061.340   19840.150       2.627     590.487     224.734     468.502       2.085

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   244.11    -0.08   244.11     0.23     0.46   441.31
 MEAN   18.08     0.00    -0.02   244.11    -0.08   244.11     0.23     0.42
 HUB    15.21     0.00    -0.02   244.11    -0.08   244.11     0.23     0.37

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    60.36    46.36    14.00   428.95   493.62     4.55   485.25   470.68    10.85
 MEAN   57.11    42.30    14.81   377.36   449.50     4.55   485.25   470.68    10.85
 HUB    52.45    37.84    14.61   317.49   400.55     4.55   485.25   470.68    10.85

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   355.73   245.34   257.59  1085.02     0.33     2.33     2.04     9.02
 MEAN   18.01   355.65   242.59   260.06  1082.68     0.33     2.40     2.13     7.35
 HUB    15.22   377.24   270.63   262.81  1080.38     0.35     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   426.24   314.77   180.90     0.29  5011.55     0.92     0.88
 MEAN  375.93   292.26   133.34     0.27  4370.56     0.92     0.88     0.88     1.69
 HUB   317.76   267.00    47.13     0.25  4121.01     0.92     0.88

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     5.25     1.11     4.87   506.80     1.03   496.65   479.98     7.75
 MEAN    5.17     1.10     4.81   504.66     1.03   494.51   478.93     8.32
 HUB     5.15     1.09     4.74   503.82     1.03   492.41   478.65     8.92

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    43.60    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN   43.01    27.15    23.50     3.65     0.95     0.52     1.63
 HUB    45.84    10.17     6.50     3.67     0.95     0.50     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.960       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   380.5927   243.2715   292.6941  1081.5264     0.3519    -0.1086     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   5.1849     4.7650   493.4789   479.3183     8.6788    39.7315    30.6000    -9.1315

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   283.5291    60.1102   277.0839  1087.1711     0.2608     0.3603     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     5.1796     4.9436   498.6469   478.8366   491.5697     0.0240     0.4572

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   293.8228     0.0000   293.8228  1086.6399     0.2704     0.3502     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9121	498.1707	478.9595	0.0000	0.0600	0.0635	0.2780

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8350	5.1644	1.0964	505.0911	15.0679	190.4582	1.4764

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
93985.648	0.517	134.349	235728.641	0.113919E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.739 EfDer = 0.975 SH = 0.131603E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.295	2391.942	5.164	505.091	1.000	1.000	0.980

W Kg/sec = 11.498 Wdry = 25.262 WH2O = 0.033 lbm/sec H2O = 0.568g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
71.050	2423.951	1.380	0.249	53.391	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56480.973	19837.760	2.621	545.479	208.138	424.468	2.039

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	248.50	-0.09	248.50	0.23	0.45	424.53
MEAN	17.74	0.00	-0.02	248.50	-0.09	248.50	0.23	0.41	
HUB	15.05	0.00	-0.02	248.50	-0.09	248.50	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.33	46.36	12.97	418.93	487.17	4.98	500.14	479.21	8.52
MEAN	56.14	43.40	12.74	370.27	446.00	4.98	500.14	479.21	8.52
HUB	51.66	38.84	12.82	314.15	400.62	4.98	500.14	479.21	8.52

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	348.03	228.94	262.13	1100.03	0.32	2.26	1.98	8.75
MEAN	17.51	349.99	229.43	264.31	1098.04	0.32	2.34	2.07	6.78
HUB	14.85	373.60	261.62	266.71	1096.08	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	413.51	320.59	184.57	0.29	4536.97	0.92	0.89		
MEAN	365.43	297.24	136.00	0.27	4017.98	0.92	0.89	0.89	1.64
HUB	309.97	271.06	48.35	0.25	3886.33	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.69	1.10	5.31	520.26	1.03	510.56	487.02	6.45
MEAN	5.62	1.09	5.25	518.53	1.03	508.71	486.25	6.83
HUB	5.61	1.09	5.18	518.09	1.03	506.91	486.20	7.21

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.13	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	40.96	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.45	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.975	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	376.2104	230.9315	296.9931	1096.8375	0.3430	-0.1171	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6355	5.2009	507.6246	486.6314	7.1148	37.8674	31.5000	-6.3674

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	292.5745	63.8232	285.5284	1101.6628	0.2656	0.3063	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6322	5.3664	512.1041	486.2028	451.3937	0.0184	0.4301

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	297.4804	0.0000	297.4804	1101.4023	0.2701	0.3334	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3457	511.8726	486.3109	0.0000	0.0600	0.0502	0.2537

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8563	5.6197	1.0882	518.9586	13.8683	196.3914	1.5224

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
86597.555	0.506	123.788	234578.797	0.147230E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.075 EfDer = 0.986 SH = 0.168295E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.295	2391.942	5.620	518.958	1.000	1.000	0.980

W Kg/sec = 11.498 Wdry = 25.253 WH2O = 0.043 lbm/sec H2O = 0.769g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
66.184	2391.346	1.379	0.250	53.403	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53313.793	19834.893	2.647	513.330	193.932	395.845	2.041

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	249.26	-0.09	249.26	0.23	0.43	401.91
MEAN	16.97	0.00	-0.02	249.26	-0.09	249.26	0.23	0.39	
HUB	14.32	0.00	-0.02	249.26	-0.09	249.26	0.23	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.21	46.36	11.85	402.03	473.10	5.43	513.99	486.56	7.04
MEAN	54.87	43.80	11.07	354.24	433.22	5.43	513.99	486.56	7.04
HUB	50.18	37.84	12.34	298.91	389.27	5.43	513.99	486.56	7.04

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	335.37	209.24	262.09	1113.43	0.30	2.16	1.89	8.34
MEAN	16.57	337.33	209.93	264.05	1111.64	0.30	2.24	1.97	6.35
HUB	13.89	359.59	241.76	266.19	1109.89	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	394.09	320.72	184.86	0.29	3952.06	0.92	0.90		
MEAN	345.96	297.02	136.03	0.27	3480.82	0.92	0.90	0.90	1.60
HUB	289.93	270.51	48.17	0.24	3359.34	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.10	1.09	5.74	532.16	1.03	523.16	492.96	5.63
MEAN	6.04	1.08	5.68	530.58	1.02	521.48	492.31	5.91
HUB	6.03	1.07	5.61	530.18	1.02	519.83	492.27	6.20

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.60	35.20	31.50	3.70	0.93	0.48	1.40
MEAN	38.49	27.26	23.50	3.76	0.94	0.46	1.62
HUB	42.25	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.986	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	358.3277	211.1112	289.5355	1110.7892	0.3226	-0.0930	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.0547	5.6394	520.7040	492.6257	6.0918	36.0972	32.4000	-3.6972

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	291.0168	65.2665	283.6036	1114.5074	0.2611	0.2668	2.2705

```
   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.0531     5.7768   524.2001   492.2886   432.2457     0.0143     0.4068

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   288.6818     0.0000   288.6818  1114.6121     0.2590     0.3175     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.7712   524.3087   492.3686     0.0000     0.0600     0.0413     0.2524

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8700     6.0427     1.0753   530.9732    12.0153   212.2728     1.6455

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  75122.000       0.484     107.384  240309.641   0.186470E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.551   EfDer =  0.993    SH =  0.211278E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.295    2391.942       6.043     530.973       1.000       1.000       0.980
 W Kg/sec =  11.498  Wdry =  25.242  WH2O = 0.053  lbm/sec   H2O =   1.017g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.260    2364.136       1.379       0.250      53.417      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50605.133   19831.529       2.793     509.668     182.483     384.739       2.108

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   238.29    -0.08   238.29     0.21     0.40   377.95
 MEAN   15.91     0.00    -0.02   238.29    -0.08   238.29     0.21     0.37
 HUB    13.07     0.00    -0.02   238.29    -0.08   238.29     0.21     0.32

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    58.08    47.36    10.72   382.40   450.64     5.86   526.44   492.62     6.13
 MEAN   54.35    44.80     9.55   332.16   408.86     5.86   526.44   492.62     6.13
 HUB    48.87    38.84    10.03   272.82   362.30     5.86   526.44   492.62     6.13

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   318.63   196.16   251.09  1125.44      0.28     2.05     1.78     7.43
 MEAN   15.50   317.86   192.41   253.01  1123.60      0.28     2.13     1.86     5.75
 HUB    12.59   334.57   216.53   255.05  1121.78      0.30     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   374.47   307.97   178.31     0.27  3520.65      0.92     0.91
 MEAN  323.49   284.95   131.08     0.25  2983.25      0.92     0.91     0.91     1.59
 HUB   262.80   259.22    46.26     0.23  2727.24      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.50     1.08     6.15   542.72     1.02   534.60   498.08     5.10
 MEAN    6.43     1.06     6.08   540.92     1.02   532.85   497.35     5.35
 HUB     6.39     1.06     6.02   540.07     1.02   531.13   497.10     5.61

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    38.00    35.38    31.50     3.88     0.93     0.47     1.40
 MEAN   37.25    27.39    23.50     3.89     0.94     0.44     1.64
 HUB    40.33    10.28     6.50     3.78     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   348.2561   195.9417   287.9047  1122.1980     0.3103    -0.1737     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.4313     6.0219   531.5491   497.6789     5.5833    34.2384    33.0000    -1.2384
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   294.4426    67.2362   286.6631  1125.1061     0.2617     0.1463     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.4297     6.1350   534.3113   497.3968   410.5396     0.0247     0.3811

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   286.4330     0.0000   286.4330  1125.4860     0.2545     0.3041     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.1464   534.6818   497.4523     0.0000     0.0600     0.0371     0.1783

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8793     6.4252     1.0633   541.2334    10.2628   232.5166     1.8025

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  64257.465       0.458      91.854  252259.391   0.231100E-02

Melt Ratio at Stator LE, Throat, TE
0.85422E-02 0.14060E-01 0.36277E-01
 trTOT =     1.1480   Tt4 =   541.2334   T1  =   471.4691

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    435509.16    622.5456     84.4236      1.5301      0.8388     15.3429      1.1480     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 37357 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.391   EfDer =  0.955    SH =  0.375744E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.855    2361.088       4.337     469.497       1.000       1.000       0.980
  W Kg/sec =  11.752  Wdry =  25.845  WH2O = 0.010  lbm/sec   H2O =   0.148g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.373    2481.708       1.381       0.249      53.360      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  63167.656   20284.199       3.407     831.557     244.092     619.754       2.539

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   182.31    -0.06   182.31     0.17     0.44   446.77
 MEAN    17.06     0.00    -0.02   182.31    -0.06   182.31     0.17     0.38
 HUB     12.51     0.00    -0.02   182.31    -0.06   182.31     0.17     0.30

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.79    50.47    16.32   425.07   462.57     4.25   466.83   456.95     8.40
 MEAN    62.59    47.20    15.39   351.51   396.03     4.25   466.83   456.95     8.40
 HUB     54.74    38.62    16.12   257.76   315.77     4.25   466.83   456.95     8.40

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   381.44   292.53   244.79  1064.35      0.36     7.29     6.52    16.04
 MEAN    18.04   386.13   296.14   247.78  1061.47      0.36     7.43     6.80    12.53
 HUB     15.00   418.25   333.86   251.94  1057.91      0.40     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    425.07   278.36   132.54     0.26  6036.17      0.92     0.87
 MEAN   371.62   259.03    75.48     0.24  5342.20      0.92     0.87     0.87     1.76
 HUB    309.07   253.15    24.80     0.24  5008.74      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.95     1.14     4.54   489.48     1.04   477.79   469.98     7.54
 MEAN     4.88     1.12     4.46   487.19     1.04   475.21   468.71     8.29
 HUB      4.84     1.12     4.35   486.08     1.04   472.03   468.24     9.31

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.08    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    50.08    16.94    12.70     4.24     0.95     0.52     2.22
 HUB     52.96    -5.62    -9.30     3.68     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.955       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   397.4477   295.5615   265.7218  1061.0918     0.3746    -0.0365     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.8858     4.4404   474.8968   469.0467     8.6727    48.0432    35.4000   -12.6432

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   264.3923    64.6784   256.3591  1068.9552     0.2473     0.5119     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.8752     4.6747   481.9697   468.6257   554.9116     0.0341     0.6035

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   263.2511     0.0000   263.2511  1068.9908     0.2463     0.4815     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.6549   482.0183   468.8057     0.0000     0.0600     0.0849     0.4670
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8167     4.8528     1.1189   487.5832    18.0872   168.3549     1.3051

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 112611.430       0.623     164.536  265726.188   0.631536E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.822   EfDer =  0.960    SH =  0.922339E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.855    2361.088       4.853     487.583       1.000       1.000       0.980
 W Kg/sec =  11.752  Wdry =  25.831  WH2O = 0.024  lbm/sec   H2O =   0.388g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.935    2435.263       1.380       0.249      53.378      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59252.477   20279.844       2.655     590.487     222.389     468.502       2.107

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   240.82    -0.08   240.82     0.23     0.46   436.71
 MEAN    18.08     0.00    -0.02   240.82    -0.08   240.82     0.23     0.41
 HUB     15.21     0.00    -0.02   240.82    -0.08   240.82     0.23     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.38    46.36    14.02   423.42   487.19     4.69   482.93   469.61    11.25
 MEAN    57.12    42.30    14.82   372.49   443.63     4.69   482.93   469.61    11.25
 HUB     52.47    37.84    14.63   313.39   395.30     4.69   482.93   469.61    11.25

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   351.19   242.11   254.39  1082.17      0.32     2.33     2.04     9.02
 MEAN    18.01   351.09   239.43   256.77  1079.89      0.33     2.40     2.13     7.35
 HUB     15.22   372.39   267.15   259.43  1077.64      0.35     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    420.74   310.84   178.63     0.29  4945.62      0.92     0.88
 MEAN   371.08   288.56   131.65     0.27  4313.69      0.92     0.88     0.88     1.69
 HUB    313.66   263.56    46.51     0.24  4068.08      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.39     1.11     5.02   503.93     1.03   494.04   478.91     8.08
 MEAN     5.32     1.10     4.95   501.84     1.03   491.95   477.85     8.67
 HUB      5.29     1.09     4.88   501.03     1.03   489.91   477.57     9.28

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.58    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN    43.00    27.14    23.50     3.64     0.95     0.52     1.63
 HUB     45.84    10.16     6.50     3.66     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.960       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   375.6909   240.1058   288.9513  1078.7633     0.3483    -0.1086     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3313     4.9079   490.9478   478.2308     9.0368    39.7251    30.6000    -9.1251

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   280.0620    59.3751   273.6957  1084.2708     0.2583     0.3599     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3260     5.0879   495.9766   477.7802   491.5697     0.0237     0.4568

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   290.2018     0.0000   290.2018  1083.7521     0.2678     0.3496     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0560	495.5131	477.8955	0.0000	0.0600	0.0635	0.2775

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8349	5.3107	1.0944	502.2659	14.6837	190.4227	1.4761

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
91564.383	0.517	133.784	241702.063	0.103962E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.718 EfDer = 0.976 SH = 0.120020E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.855	2361.088	5.311	502.266	1.000	1.000	0.980

W Kg/sec = 11.752 Wdry = 25.824 WH2O = 0.031 lbm/sec H2O = 0.536g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.424	2399.404	1.380	0.249	53.387	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55795.949	20277.629	2.644	545.479	206.292	424.468	2.058

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	245.49	-0.08	245.49	0.23	0.44	420.23
MEAN	17.74	0.00	-0.02	245.49	-0.08	245.49	0.23	0.41	
HUB	15.05	0.00	-0.02	245.49	-0.08	245.49	0.23	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.31	46.36	12.95	413.53	480.98	5.13	497.44	478.14	8.88
MEAN	56.12	43.40	12.72	365.49	440.35	5.13	497.44	478.14	8.88
HUB	51.64	38.84	12.80	310.10	395.57	5.13	497.44	478.14	8.88

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	343.70	225.71	259.20	1096.82	0.31	2.26	1.98	8.75
MEAN	17.51	345.65	226.28	261.30	1094.88	0.32	2.34	2.07	6.78
HUB	14.85	369.00	258.19	263.62	1092.98	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	408.17	316.98	182.46	0.29	4473.01	0.92	0.89		
MEAN	360.71	293.85	134.44	0.27	3962.82	0.92	0.89	0.89	1.64
HUB	305.98	267.92	47.78	0.25	3835.40	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.83	1.10	5.46	517.04	1.03	507.57	485.93	6.76
MEAN	5.77	1.09	5.39	515.35	1.03	505.78	485.16	7.14
HUB	5.76	1.08	5.33	514.93	1.03	504.02	485.10	7.54

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.05	35.14	31.50	3.64	0.93	0.51	1.40
MEAN	40.89	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.40	10.27	6.50	3.77	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	371.5668	227.7612	293.5758	1093.7061	0.3397	-0.1172	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7847	5.3466	504.7121	485.5310	7.4453	37.8049	31.5000	-6.3049

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	289.3527	63.1203	282.3841	1098.4093	0.2634	0.3048	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7815	5.5129	509.0652	485.1295	451.3937	0.0182	0.4287

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	294.1857	0.0000	294.1857	1098.1548	0.2679	0.3321	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4921	508.8396	485.2314	0.0000	0.0600	0.0499	0.2522

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8566	5.7689	1.0863	515.7720	13.5069	196.5858	1.5239

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
84310.563	0.506	123.186	240643.891	0.134213E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.021 EfDer = 0.986 SH = 0.153371E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.855	2361.088	5.769	515.772	1.000	1.000	0.980

W Kg/sec = 11.752 Wdry = 25.815 WH2O = 0.040 lbm/sec H2O = 0.724g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.697	2367.780	1.379	0.250	53.398	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52732.254	20274.963	2.667	513.330	192.485	395.845	2.056

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	246.54	-0.08	246.54	0.22	0.42	397.95
MEAN	16.97	0.00	-0.02	246.54	-0.08	246.54	0.22	0.39	
HUB	14.32	0.00	-0.02	246.54	-0.08	246.54	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.15	46.36	11.79	396.84	467.26	5.57	510.91	485.47	7.38
MEAN	54.82	43.80	11.02	349.67	427.91	5.57	510.91	485.47	7.38
HUB	50.13	37.84	12.29	295.05	384.56	5.57	510.91	485.47	7.38

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	331.31	206.04	259.44	1109.90	0.30	2.16	1.89	8.34
MEAN	16.57	333.31	206.88	261.34	1108.16	0.30	2.24	1.97	6.35
HUB	13.89	355.35	238.52	263.41	1106.45	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	389.01	317.47	182.97	0.29	3891.74	0.92	0.90		
MEAN	341.49	293.97	134.61	0.27	3430.27	0.92	0.90	0.90	1.59
HUB	286.19	267.68	47.67	0.24	3314.27	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.25	1.08	5.88	528.61	1.02	519.82	491.85	5.92
MEAN	6.20	1.07	5.82	527.09	1.02	518.19	491.20	6.21
HUB	6.18	1.07	5.76	526.70	1.02	516.60	491.16	6.51

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.46	35.19	31.50	3.69	0.93	0.48	1.40
MEAN	38.37	27.25	23.50	3.75	0.94	0.46	1.62
HUB	42.16	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.986	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	354.1038	208.0448	286.5429	1107.3203	0.3198	-0.0933	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.2059	5.7872	517.4323	491.5103	6.4027	35.9816	32.4000	-3.5816

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	288.1273	64.6185	280.7878	1110.9386	0.2594	0.2642	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.2043	5.9248	520.8231	491.1942	432.2457	0.0140	0.4047

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	285.8075	0.0000	285.8075	1111.0422	0.2572	0.3154	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.9193	520.9299	491.2699	0.0000	0.0600	0.0410	0.2499

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8704	6.1939	1.0737	527.4655	11.6942	212.7422	1.6492

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
73079.453	0.483	106.776	246635.875	0.169889E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.467 EfDer = 0.994 SH = 0.192457E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.855	2361.088	6.194	527.465	1.000	1.000	0.980

W Kg/sec = 11.752 Wdry = 25.805 WH2O = 0.050 lbm/sec H2O = 0.956g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
61.878	2341.387	1.379	0.250	53.411	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50107.945	20271.838	2.811	509.668	181.344	384.739	2.122

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	235.95	-0.08	235.95	0.21	0.40	374.31
MEAN	15.91	0.00	-0.02	235.95	-0.08	235.95	0.21	0.36	
HUB	13.07	0.00	-0.02	235.95	-0.08	235.95	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.00	47.36	10.64	377.47	445.22	6.01	523.01	491.51	6.45
MEAN	54.27	44.80	9.47	327.88	404.02	6.01	523.01	491.51	6.45
HUB	48.78	38.84	9.94	269.30	358.10	6.01	523.01	491.51	6.45

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	314.85	192.94	248.81	1121.62	0.28	2.05	1.78	7.43
MEAN	15.50	314.22	189.48	250.66	1119.83	0.28	2.13	1.86	5.75
HUB	12.59	330.85	213.62	252.64	1118.06	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	369.64	305.17	176.70	0.27	3462.82	0.92	0.91		
MEAN	319.32	282.30	129.84	0.25	2937.71	0.92	0.91	0.91	1.58
HUB	259.41	256.76	45.79	0.23	2690.57	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.65	1.07	6.30	538.87	1.02	530.95	496.95	5.39
MEAN	6.58	1.06	6.23	537.14	1.02	529.25	496.22	5.65
HUB	6.55	1.06	6.16	536.33	1.02	527.58	495.98	5.92

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.79	35.38	31.50	3.88	0.93	0.47	1.40
MEAN	37.09	27.38	23.50	3.88	0.94	0.44	1.64
HUB	40.22	10.27	6.50	3.77	0.94	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	344.3422	192.9497	285.2052	1118.4500	0.3079	-0.1744	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.5837	6.1709	527.9722	496.5421	5.8922	34.0795	33.0000	-1.0795

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   291.7816    66.6286   284.0724  1121.2733     0.2602     0.1427     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.5821     6.2838   530.6444   496.2800   410.5396     0.0244     0.3784

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   283.8516     0.0000   283.8516  1121.6488     0.2531     0.3013     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.2952   531.0090   496.3398     0.0000     0.0600     0.0370     0.1746

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8794     6.5776     1.0619   537.4469     9.9824   233.2847     1.8084

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  62465.145       0.457      91.268  259007.469   0.211132E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.11010E-02 0.11168E-01
 trTOT =     1.1447   Tt4 =   537.4469   T1  =   469.4972

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    424030.97    619.5496     83.3730      1.5166      0.8389     15.3908      1.1447     37.3740
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*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 34281 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.483   EfDer =  0.954    SH =  0.388889E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     27.697    2286.627       4.829     471.207       1.000       1.000       0.980
  W Kg/sec =  12.590  Wdry =  27.687  WH2O = 0.011  lbm/sec   H2O =   0.170g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.368    2399.081       1.381       0.249      53.361      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60935.738   21729.355       3.534     831.557     235.299     619.754       2.634

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   175.87    -0.06   175.87     0.17     0.42   431.90
 MEAN    17.06     0.00    -0.02   175.87    -0.06   175.87     0.17     0.36
 HUB     12.51     0.00    -0.02   175.87    -0.06   175.87     0.17     0.29

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.87    50.47    16.40   411.66   447.71      4.74   468.72   458.93     8.89
 MEAN    62.68    47.20    15.48   340.43   383.23      4.74   468.72   458.93     8.89
 HUB     54.84    38.62    16.22   249.63   305.41      4.74   468.72   458.93     8.89

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   369.37   283.45   236.83  1065.68      0.35     7.29     6.52    16.04
 MEAN    18.04   373.78   286.94   239.53  1062.98      0.35     7.43     6.80    12.53
 HUB     15.00   404.57   323.26   243.26  1059.66      0.38     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    411.66   269.31   128.21     0.25  5848.85      0.92     0.87
 MEAN   359.90   250.40    72.96     0.24  5176.36      0.92     0.87     0.87     1.76
 HUB    299.32   244.44    23.94     0.23  4849.63      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.47     1.13     5.03   489.96     1.04   479.00   471.31     7.99
 MEAN     5.39     1.12     4.95   487.80     1.04   476.58   470.09     8.73
 HUB      5.35     1.11     4.85   486.76     1.03   473.61   469.64     9.72

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     50.12    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    50.15    16.94    12.70     4.24     0.95     0.52     2.22
 HUB     53.04    -5.62    -9.30     3.68     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.954       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   384.6732   286.3866   256.8194  1062.6298     0.3620    -0.0366     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3976     4.9361   476.2903   470.4124     9.0952    48.1156    35.4000   -12.7156

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   256.1432    62.6604   248.3606  1069.9749     0.2394     0.5124     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3870     5.1791   482.9048   470.0208   554.9116     0.0331     0.6033

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   254.9967     0.0000   254.9967  1070.0103     0.2383     0.4807     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.1580   482.9521   470.1844     0.0000     0.0600     0.0854     0.4662
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8156     5.3631     1.1107   488.1731    16.9670   167.9930     1.3023

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 105647.125       0.623     165.359  283569.125   0.624021E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.809   EfDer =  0.960    SH =  0.889338E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     27.697    2286.627       5.363     488.173       1.000       1.000       0.980
 W Kg/sec =  12.590  Wdry =  27.673  WH2O = 0.025  lbm/sec   H2O =   0.413g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.649    2357.037       1.380       0.249      53.377      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57412.262   21725.084       2.738     590.487     215.694     468.502       2.172

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   233.34    -0.08   233.34     0.22     0.44   422.68
 MEAN    18.08     0.00    -0.02   233.34    -0.08   233.34     0.22     0.40
 HUB     15.21     0.00    -0.02   233.34    -0.08   233.34     0.22     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.36    46.36    14.00   410.07   471.88     5.19   483.81   470.93    11.59
 MEAN    57.11    42.30    14.81   360.74   429.70     5.19   483.81   470.93    11.59
 HUB     52.45    37.84    14.61   303.51   382.90     5.19   483.81   470.93    11.59

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   340.37   233.92   247.26  1082.32      0.31     2.33     2.04     9.02
 MEAN    18.01   340.34   231.57   249.41  1080.19      0.32     2.40     2.13     7.35
 HUB     15.22   360.97   258.63   251.81  1078.09      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    407.47   302.09   173.56     0.28  4778.23      0.92     0.88
 MEAN   359.38   280.25   127.81     0.26  4172.10      0.92     0.88     0.88     1.69
 HUB    303.77   255.82    45.14     0.24  3938.36      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.92     1.10     5.53   503.47     1.03   494.18   479.81     8.52
 MEAN     5.85     1.09     5.46   501.53     1.03   492.24   478.80     9.09
 HUB      5.82     1.08     5.39   500.78     1.03   490.33   478.53     9.69

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.41    35.07    31.50     3.57     0.93     0.54     1.40
 MEAN    42.88    27.13    23.50     3.63     0.95     0.51     1.63
 HUB     45.77    10.16     6.50     3.66     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.960       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   364.1980   232.2248   280.5563  1079.1288     0.3375    -0.1091     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8568     5.4186   491.2884   479.1589     9.4561    39.6156    30.6000    -9.0156

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   272.3903    57.7487   266.1983  1084.2609     0.2512     0.3570     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8517     5.6037   495.9753   478.7499   491.5697     0.0227     0.4539

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   282.1679     0.0000   282.1679  1083.7747     0.2604     0.3469     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5706	495.5406	478.8554	0.0000	0.0600	0.0629	0.2742

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8352	5.8356	1.0881	501.9250	13.7529	190.6766	1.4781

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
85756.125	0.516	134.225	258275.141	0.995669E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.598 EfDer = 0.976 SH = 0.114027E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.697	2286.627	5.836	501.925	1.000	1.000	0.980

W Kg/sec = 12.590 Wdry = 27.666 WH2O = 0.032 lbm/sec H2O = 0.560g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.632	2324.524	1.380	0.249	53.385	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54282.242	21722.939	2.713	545.479	201.037	424.468	2.111

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	238.83	-0.08	238.83	0.22	0.43	407.11
MEAN	17.74	0.00	-0.02	238.83	-0.08	238.83	0.22	0.39	
HUB	15.05	0.00	-0.02	238.83	-0.08	238.83	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.20	46.36	12.84	400.49	466.36	5.64	497.35	479.08	9.32
MEAN	56.00	43.40	12.60	353.96	427.07	5.64	497.35	479.08	9.32
HUB	51.51	38.84	12.67	300.32	383.77	5.64	497.35	479.08	9.32

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	333.45	217.36	252.87	1095.97	0.30	2.26	1.98	8.75
MEAN	17.51	335.50	218.29	254.78	1094.18	0.31	2.34	2.07	6.78
HUB	14.85	358.31	249.80	256.88	1092.41	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	395.30	309.21	177.94	0.28	4307.51	0.92	0.89		
MEAN	349.34	286.50	131.05	0.26	3822.98	0.92	0.89	0.89	1.63
HUB	296.33	261.06	46.53	0.24	3710.73	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.37	1.09	5.98	515.70	1.03	506.79	486.54	7.23
MEAN	6.31	1.08	5.92	514.15	1.02	505.13	485.80	7.61
HUB	6.30	1.08	5.85	513.79	1.02	503.50	485.76	8.01

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.68	35.13	31.50	3.63	0.93	0.50	1.40
MEAN	40.59	27.22	23.50	3.72	0.94	0.49	1.62
HUB	44.20	10.27	6.50	3.77	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	360.7807	219.7230	286.1546	1093.0620	0.3301	-0.1182	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3222	5.8689	504.1197	486.1557	7.9158	37.5188	31.5000	-6.0188

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	282.4693	61.6188	275.6665	1097.4260	0.2574	0.2983	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3192	6.0386	508.1559	485.7928	451.3937	0.0172	0.4232

```
    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   287.1297     0.0000   287.1297  1097.1864     0.2617     0.3269     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.0171   507.9434   485.8864     0.0000     0.0600     0.0488     0.2459

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8578     6.3063     1.0806   514.5483    12.6240   197.5731     1.5316

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  78788.445       0.504     123.320  257562.688   0.126718E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =10.797   EfDer =  0.987    SH =  0.143769E-02

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     27.697    2286.627       6.306     514.548       1.000       1.000       0.980
 W Kg/sec =  12.590  Wdry =  27.657  WH2O = 0.040  lbm/sec   H2O =   0.745g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     64.304    2295.833       1.379       0.249      53.395      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  51492.910   21720.393       2.725     513.330     188.395     395.845       2.101

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   240.74    -0.08   240.74      0.22     0.41   385.86
 MEAN    16.97     0.00    -0.02   240.74    -0.08   240.74      0.22     0.38
 HUB     14.32     0.00    -0.02   240.74    -0.08   240.74      0.22     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.94    46.36    11.58   384.33   453.57     6.10   509.91   486.10     7.86
 MEAN    54.60    43.80    10.80   338.64   415.56     6.10   509.91   486.10     7.86
 HUB     49.89    37.84    12.05   285.75   373.71     6.10   509.91   486.10     7.86

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   321.84   197.68   253.98  1108.15     0.29     2.16     1.89     8.34
 MEAN    16.57   324.04   199.05   255.69  1106.55     0.29     2.24     1.97     6.35
 HUB     13.89   345.67   230.53   257.57  1104.97     0.31     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    376.74   310.75   179.06     0.28  3733.85     0.92     0.90
 MEAN   330.72   287.60   131.67     0.26  3300.50     0.92     0.90     0.90     1.58
 HUB    277.17   261.76    46.64     0.24  3203.28     0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.80     1.08     6.42   526.48     1.02   518.19   492.21     6.41
 MEAN     6.74     1.07     6.36   525.09     1.02   516.69   491.59     6.70
 HUB      6.73     1.07     6.29   524.78     1.02   515.22   491.57     6.99

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     37.90    35.18    31.50     3.68     0.93     0.47     1.40
 MEAN    37.90    27.25    23.50     3.75     0.94     0.45     1.62
 HUB     41.83    10.26     6.50     3.76     0.94     0.46     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.987       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   344.4375   200.1734   280.2995  1105.7448     0.3115    -0.0947     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.7524     6.3192   515.9556   491.8915     6.8922    35.5322    32.4000    -3.1322

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   282.2069    63.2908   275.0182  1109.0809     0.2545     0.2544     2.2705
```

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7511	6.4580	519.0770	491.6078	432.2457	0.0133	0.3969

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	279.9094	0.0000	279.9094	1109.1825	0.2524	0.3077	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.4525	519.1807	491.6768	0.0000	0.0600	0.0400	0.2407

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8719	6.7404	1.0688	525.4510	10.9034	214.6161	1.6637

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
68120.172	0.480	106.622	264367.250	0.158393E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.152 EfDer = 0.995 SH = 0.178310E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.697	2286.627	6.740	525.451	1.000	1.000	0.980

W Kg/sec = 12.590 Wdry = 27.648 WH2O = 0.049 lbm/sec H2O = 0.969g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
60.796	2271.890	1.379	0.250	53.406	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49093.113	21717.436	2.861	509.668	178.158	384.739	2.160

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	231.17	-0.08	231.17	0.21	0.39	363.20
MEAN	15.91	0.00	-0.02	231.17	-0.08	231.17	0.21	0.35	
HUB	13.07	0.00	-0.02	231.17	-0.08	231.17	0.21	0.31	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.70	47.36	10.34	365.57	432.60	6.54	521.18	491.90	6.95
MEAN	53.95	44.80	9.15	317.54	392.84	6.54	521.18	491.90	6.95
HUB	48.46	38.84	9.62	260.81	348.57	6.54	521.18	491.90	6.95

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	306.17	184.52	244.32	1119.07	0.27	2.05	1.78	7.43
MEAN	15.50	305.90	181.82	246.00	1117.42	0.27	2.13	1.86	5.75
HUB	12.59	322.43	206.30	247.80	1115.79	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	357.99	299.64	173.47	0.27	3311.73	0.92	0.91		
MEAN	309.25	277.04	127.43	0.25	2819.07	0.92	0.91	0.91	1.57
HUB	251.23	251.83	44.93	0.23	2598.39	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.20	1.07	6.84	536.02	1.02	528.52	497.09	5.87
MEAN	7.13	1.06	6.77	534.45	1.02	526.96	496.41	6.14
HUB	7.10	1.05	6.71	533.74	1.02	525.43	496.19	6.41

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.06	35.37	31.50	3.87	0.93	0.46	1.40
MEAN	36.47	27.38	23.50	3.88	0.93	0.43	1.64
HUB	39.78	10.28	6.50	3.78	0.93	0.42	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	335.5306	185.1562	279.8178	1116.0948	0.3006	-0.1767	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.1362	6.7087	525.7365	496.7126	6.3945	33.4927	33.0000	-0.4927

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   286.5802    65.4408   279.0085  1118.6732     0.2562     0.1289     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.1349     6.8211   528.1713   496.4799   410.5396     0.0236     0.3687

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   278.8050     0.0000   278.8050  1119.0364     0.2491     0.2909     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.8330   528.5223   496.5318     0.0000     0.0600     0.0367     0.1611

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8803     7.1300     1.0578   534.7360     9.2862   236.1614     1.8307

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  58084.676       0.453      90.914  277999.500   0.194637E-02

Melt Ratio at Stator LE, Throat, TE
0.80126E-03 0.28729E-02 0.14447E-01
 trTOT =     1.1348   Tt4 =   534.7360   T1  =   471.2072

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    396396.56    620.4397     80.3681      1.4766      0.8398     15.4827     1.1348     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 30029 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =14.017   EfDer =  0.966    SH =  0.526954E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     31.582    2159.319       5.592     480.735       1.000       1.000       0.980
  W Kg/sec =  14.356  Wdry =  31.566  WH2O = 0.017  lbm/sec   H2O =   0.262g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     79.922    2242.954       1.381       0.249      53.365      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  61202.996   24775.910       3.553     831.557     234.019     619.754       2.648

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   176.64    -0.06   176.64     0.17     0.40   403.79
 MEAN    17.06     0.00    -0.02   176.64    -0.06   176.64     0.17     0.34
 HUB     12.51     0.00    -0.02   176.64    -0.06   176.64     0.17     0.28

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.57    50.47    15.10   388.74   427.05      5.49   478.23   466.22     9.19
 MEAN    61.22    47.20    14.02   321.47   366.86      5.49   478.23   466.22     9.19
 HUB     53.16    38.62    14.54   235.73   294.62      5.49   478.23   466.22     9.19

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   353.11   259.74   239.21  1074.42      0.33     7.29     6.52    16.04
 MEAN    18.04   359.80   266.68   241.54  1072.16      0.34     7.43     6.80    12.53
 HUB     15.00   392.72   307.04   244.86  1069.28      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    388.74   271.78   129.00     0.25  5359.67      0.92     0.88
 MEAN   339.86   252.38    73.19     0.24  4810.81      0.92     0.88     0.88     1.66
 HUB    282.65   246.07    24.39     0.23  4606.37      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.22     1.11     5.78   496.95     1.03   486.94   476.69     8.45
 MEAN     6.15     1.10     5.70   495.29     1.03   484.90   475.80     9.07
 HUB      6.13     1.10     5.59   494.67     1.03   482.29   475.62     9.93

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     47.36    28.34    24.20     4.14     0.93     0.53     1.80
 MEAN    47.83    16.86    12.70     4.16     0.95     0.48     2.22
 HUB     51.43    -5.69    -9.30     3.61     0.95     0.35     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.966       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   371.3716   266.1580   258.9918  1071.7729     0.3465    -0.0419     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.1638     5.6788   484.5714   476.1011     9.4195    45.7818    35.4000   -10.3818

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   259.6058    63.5075   251.7180  1078.0070     0.2408     0.4721     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.1560     5.9157   490.2316   475.7250   554.9116     0.0262     0.5610

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   258.1738     0.0000   258.1738  1078.0577     0.2395     0.4517     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.8979   490.2914   475.8853     0.0000     0.0600     0.0707     0.4348
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8334     6.1347     1.0970   495.6401    14.9057   175.1292     1.3576

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  92867.484       0.615     165.745  318462.063   0.774499E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =12.966   EfDer =  0.974    SH =  0.104175E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.582    2159.319       6.135     495.640       1.000       1.000       0.980
 W Kg/sec =  14.356  Wdry =  31.549  WH2O = 0.033  lbm/sec   H2O =   0.545g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.976    2208.979       1.380       0.249      53.382      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58124.930   24770.896       2.725     590.487     216.675     468.502       2.162

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   236.24    -0.08   236.24     0.22     0.42   396.13
 MEAN    18.08     0.00    -0.02   236.24    -0.08   236.24     0.22     0.38
 HUB     15.21     0.00    -0.02   236.24    -0.08   236.24     0.22     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.62    46.36    12.26   387.24   453.68     5.94   491.17   476.59    11.46
 MEAN    55.27    42.30    12.97   340.66   414.63     5.94   491.17   476.59    11.46
 HUB     50.51    37.84    12.67   286.61   371.49     5.94   491.17   476.59    11.46

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   326.83   208.39   251.77  1088.55      0.30     2.33     2.04     9.02
 MEAN    18.01   329.04   209.68   253.58  1086.85      0.30     2.40     2.13     7.35
 HUB     15.22   351.47   241.26   255.59  1085.17      0.32     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    384.79   307.41   176.39     0.28  4257.09      0.92     0.89
 MEAN   339.37   284.82   129.69     0.26  3777.84      0.92     0.89     0.89     1.60
 HUB    286.86   259.62    45.59     0.24  3673.97      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.67     1.09     6.27   508.50     1.03   499.94   483.95     8.95
 MEAN     6.60     1.08     6.20   507.05     1.02   498.37   483.22     9.41
 HUB      6.59     1.07     6.14   506.74     1.02   496.84   483.19     9.89

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.61    35.02    31.50     3.52     0.93     0.49     1.40
 MEAN    39.59    27.09    23.50     3.59     0.94     0.47     1.63
 HUB     43.35    10.11     6.50     3.61     0.94     0.47     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.974       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   354.4095   210.2710   285.2933  1085.7289     0.3264    -0.1223     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6162     6.1518   497.3639   483.5801     9.7914    36.3915    30.6000    -5.7915

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   278.1404    58.9677   271.8177  1089.9387     0.2552     0.2933     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6134     6.3245   501.2306   483.2209   491.5697     0.0167     0.4004

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   287.9078     0.0000   287.9078  1089.4476     0.2643     0.3016     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.2918	500.7877	483.3331	0.0000	0.0600	0.0479	0.2152

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8551	6.6003	1.0759	507.4306	11.7913	203.2496	1.5756

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
73568.070	0.497	131.300	291253.063	0.114725E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =10.522 EfDer = 0.989 SH = 0.128567E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.582	2159.319	6.600	507.430	1.000	1.000	0.980

W Kg/sec = 14.356 Wdry = 31.542 WH2O = 0.041 lbm/sec H2O = 0.706g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.570	2183.165	1.380	0.249	53.390	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55369.285	24768.520	2.676	545.479	203.806	424.468	2.083

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	243.61	-0.08	243.61	0.22	0.41	382.36
MEAN	17.74	0.00	-0.02	243.61	-0.08	243.61	0.22	0.38	
HUB	15.05	0.00	-0.02	243.61	-0.08	243.61	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.22	46.36	10.86	378.19	449.93	6.38	502.68	483.51	9.66
MEAN	53.92	43.40	10.52	334.26	413.68	6.38	502.68	483.51	9.66
HUB	49.35	38.84	10.51	283.60	373.93	6.38	502.68	483.51	9.66

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	322.08	190.83	259.46	1099.97	0.29	2.26	1.98	8.75
MEAN	17.51	326.23	195.71	261.00	1098.58	0.30	2.34	2.07	6.78
HUB	14.85	350.67	232.27	262.72	1097.23	0.32	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	373.29	317.19	182.46	0.29	3782.00	0.92	0.90		
MEAN	329.89	293.47	134.17	0.27	3427.75	0.92	0.90	0.90	1.54
HUB	279.83	266.99	47.56	0.24	3450.44	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.10	1.08	6.70	518.85	1.02	510.54	489.69	7.87
MEAN	7.05	1.07	6.64	517.78	1.02	509.25	489.20	8.19
HUB	7.06	1.07	6.58	517.85	1.02	508.00	489.37	8.50

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.33	35.12	31.50	3.62	0.93	0.45	1.40
MEAN	36.86	27.21	23.50	3.71	0.94	0.44	1.62
HUB	41.48	10.26	6.50	3.76	0.94	0.44	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.989	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	353.2589	196.9972	293.2303	1097.3895	0.3219	-0.1327	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.0665	6.5836	508.1632	489.5587	8.5198	33.8939	31.5000	-2.3939

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	290.6247	63.3978	283.6255	1100.8693	0.2640	0.2224	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.0651	6.7356	511.3928	489.2499	451.3937	0.0133	0.3647

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	295.2773	0.0000	295.2773	1100.6260	0.2683	0.2717	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7148	511.1748	489.3437	0.0000	0.0600	0.0386	0.1741

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8734	7.0542	1.0688	518.1562	10.7262	212.8347	1.6499

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
66980.125	0.481	119.542	291532.125	0.140535E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.476 EfDer = 0.997 SH = 0.156191E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.582	2159.319	7.054	518.156	1.000	1.000	0.980

W Kg/sec = 14.356 Wdry = 31.533 WH2O = 0.049 lbm/sec H2O = 0.898g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.779	2160.452	1.379	0.250	53.399	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52924.711	24765.824	2.663	513.330	192.734	395.845	2.054

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	247.44	-0.09	247.44	0.22	0.40	363.11
MEAN	16.97	0.00	-0.02	247.44	-0.09	247.44	0.22	0.37	
HUB	14.32	0.00	-0.02	247.44	-0.09	247.44	0.22	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.72	46.36	9.36	362.93	439.32	6.81	513.26	489.50	8.43
MEAN	52.28	43.80	8.48	319.79	404.41	6.81	513.26	489.50	8.43
HUB	47.49	37.84	9.65	269.84	366.18	6.81	513.26	489.50	8.43

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	313.10	170.58	262.55	1110.08	0.28	2.16	1.89	8.34
MEAN	16.57	317.37	176.28	263.91	1108.89	0.29	2.24	1.97	6.35
HUB	13.89	340.67	213.58	265.40	1107.72	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	355.77	321.29	185.18	0.29	3222.27	0.92	0.91		
MEAN	312.31	296.90	136.03	0.27	2923.12	0.92	0.91	0.91	1.48
HUB	261.74	269.73	48.16	0.24	2967.87	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.50	1.06	7.11	527.87	1.02	520.03	494.53	7.16
MEAN	7.46	1.06	7.05	526.97	1.02	518.91	494.14	7.40
HUB	7.47	1.06	7.00	527.11	1.02	517.82	494.34	7.63

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	33.01	35.20	31.50	3.70	0.93	0.41	1.40
MEAN	33.74	27.27	23.50	3.77	0.93	0.40	1.62
HUB	38.83	10.28	6.50	3.78	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.997	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	339.3772	177.2730	289.3979	1108.0026	0.3063	-0.1071	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.4727	7.0086	518.1024	494.4460	7.6241	31.4899	32.4000	0.9101

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	292.4697	65.5924	285.0196	1110.5326	0.2634	0.1700	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.4718	7.1251	520.4738	494.2181	432.2457	0.0121	0.3338

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	290.0229	0.0000	290.0229	1110.6470	0.2611	0.2417	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.1208	520.5881	494.2773	0.0000	0.0600	0.0369	0.1598

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8791	7.4613	1.0577	527.3168	9.1611	234.0459	1.8143

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
57261.223	0.452	102.197	300255.969	0.169467E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.611 EfDer = 1.000 SH = 0.187201E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.582	2159.319	7.461	527.317	1.000	1.000	0.980

W Kg/sec = 14.356 Wdry = 31.523 WH2O = 0.059 lbm/sec H2O = 1.120g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.737	2141.604	1.379	0.250	53.409	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50827.988	24762.795	2.772	509.668	183.859	384.739	2.093

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	239.34	-0.08	239.34	0.22	0.38	342.37
MEAN	15.91	0.00	-0.02	239.34	-0.08	239.34	0.22	0.34	
HUB	13.07	0.00	-0.02	239.34	-0.08	239.34	0.22	0.31	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.27	47.36	7.91	345.21	420.14	7.23	522.74	494.43	7.62
MEAN	51.41	44.80	6.61	299.86	383.73	7.23	522.74	494.43	7.62
HUB	45.83	38.84	6.99	246.29	343.49	7.23	522.74	494.43	7.62

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	299.03	157.19	254.38	1119.19	0.27	2.05	1.78	7.43
MEAN	15.50	301.29	159.33	255.72	1117.96	0.27	2.13	1.86	5.75
HUB	12.59	319.95	190.36	257.16	1116.74	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	338.05	312.13	180.86	0.28	2821.52	0.92	0.91		
MEAN	292.03	288.10	132.70	0.26	2470.56	0.92	0.91	0.91	1.46
HUB	237.24	261.39	46.88	0.23	2397.74	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.87	1.05	7.49	535.82	1.02	528.67	498.67	6.67
MEAN	7.82	1.05	7.44	534.76	1.01	527.50	498.22	6.89
HUB	7.81	1.05	7.38	534.54	1.01	526.36	498.23	7.11

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.71	35.41	31.50	3.91	0.93	0.39	1.40
MEAN	31.93	27.43	23.50	3.93	0.93	0.37	1.64
HUB	36.51	10.33	6.50	3.83	0.93	0.37	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	333.1894	162.2529	291.0140	1116.5198	0.2984	-0.1956	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8238	7.3617	526.1656	498.5423	7.1888	29.1416	33.0000	3.8584

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   299.1602    68.3135   291.2561  1118.3412     0.2675     0.0233     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.8212     7.4471   527.8853   498.3654   410.5396     0.0267     0.3027

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   291.0161     0.0000   291.0161  1118.7404     0.2601     0.2155     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.4613   528.2680   498.3911     0.0000     0.0600     0.0417     0.0592

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8750     7.8152     1.0474   535.0359     7.7220   260.5247     2.0196

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  48316.176       0.423      86.232  316639.750   0.200694E-02

Melt Ratio at Stator LE, Throat, TE
0.23121E-01 0.29926E-01 0.53604E-01
 trTOT =     1.1130   Tt4 =   535.0359   T1  =   480.7353

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    338993.09    605.0160     79.9221      1.3975      0.8538     14.0171      1.1130     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 25666 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.253   EfDer =  0.995    SH =  0.703876E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     39.605    1974.585       6.513     491.411       1.000       1.000       0.980
  W Kg/sec =  18.002  Wdry =  39.577  WH2O = 0.028  lbm/sec   H2O =   0.397g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     87.009    2028.667       1.380       0.249      53.371      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  67551.438   31067.453       3.264     831.557     254.804     619.754       2.432

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   194.96    -0.07   194.96     0.18     0.38   365.21
 MEAN    17.06     0.00    -0.02   194.96    -0.07   194.96     0.18     0.33
 HUB     12.51     0.00    -0.02   194.96    -0.07   194.96     0.18     0.27

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     61.26    50.47    10.79   355.49   405.50     6.37   488.36   474.10     9.31
 MEAN    56.45    47.20     9.25   293.97   352.80     6.37   488.36   474.10     9.31
 HUB     47.88    38.62     9.26   215.57   290.70     6.37   488.36   474.10     9.31

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   340.81   212.11   266.76  1082.33      0.31     7.29     6.52    16.04
 MEAN    18.04   353.46   229.78   268.57  1080.86      0.33     7.43     6.80    12.53
 HUB     15.00   394.26   285.79   271.60  1078.60      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    355.49   302.85   143.38     0.28  4377.18      0.92     0.91
 MEAN   310.79   280.52    81.00     0.26  4145.53      0.92     0.91     0.91     1.42
 HUB    258.47   272.97    27.31     0.25  4287.63      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.06     1.08     6.60   503.52     1.02   494.20   481.86     9.11
 MEAN     7.03     1.08     6.53   502.87     1.02   492.85   481.57     9.53
 HUB      7.05     1.08     6.43   503.27     1.02   490.79   482.02    10.19

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.49    28.26    24.20     4.06     0.93     0.40     1.80
 MEAN    40.55    16.78    12.70     4.08     0.93     0.36     2.22
 HUB     46.46    -5.74    -9.30     3.56     0.93     0.24     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.995       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   368.3355   229.3376   288.2279  1080.2668     0.3410    -0.0593     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     7.0394     6.5023   492.3376   481.8943     9.9068    38.5086    35.4000    -3.1086

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   291.1993    71.2362   282.3517  1084.7280     0.2685     0.3379     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     7.0370     6.6978   496.4183   481.5913   554.9116     0.0146     0.4378

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   289.0782     0.0000   289.0782  1084.8247     0.2665     0.3495     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     6.6900   496.5174   481.7387     0.0000     0.0600     0.0399     0.3230
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8747     7.0237     1.0785   503.2189    11.8083   200.2616     1.5524

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  73620.422       0.583     164.771  393886.375   0.944229E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.406   EfDer =  0.999    SH =  0.118389E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     39.605    1974.585       7.024     503.219       1.000       1.000       0.980
 W Kg/sec =  18.002  Wdry =  39.558  WH2O = 0.047  lbm/sec   H2O =   0.695g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     81.644    2004.728       1.380       0.249      53.387      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  65004.543   31061.590       2.469     590.487     239.159     468.502       1.959

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   264.20    -0.09   264.20     0.24     0.41   359.50
 MEAN    18.08     0.00    -0.02   264.20    -0.09   264.20     0.24     0.38
 HUB     15.21     0.00    -0.02   264.20    -0.09   264.20     0.24     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.28    46.36     6.92   354.11   441.88     6.74   497.63   482.32    11.44
 MEAN    49.71    42.30     7.41   311.52   408.54     6.74   497.63   482.32    11.44
 HUB     44.78    37.84     6.94   262.09   372.21     6.74   497.63   482.32    11.44

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   322.87   152.24    284.72  1092.32      0.30     2.33     2.04     9.02
 MEAN    18.01   329.49   163.94    285.81  1091.48      0.30     2.40     2.13     7.35
 HUB     15.22   356.16   210.81    287.07  1090.66      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    351.87   347.73   199.62     0.32  3110.67      0.92     0.91
 MEAN   310.34   321.12   146.40     0.29  2954.11      0.92     0.91     0.91     1.38
 HUB    262.32   291.65    51.51     0.27  3210.54      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.43     1.06     7.00   511.81     1.02   503.46   487.23     9.82
 MEAN     7.41     1.05     6.96   511.38     1.02   502.68   487.05    10.06
 HUB      7.44     1.06     6.92   512.08     1.02   501.92   487.57    10.30

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     28.13    35.04    31.50     3.54     0.93     0.34     1.40
 MEAN    29.84    27.12    23.50     3.62     0.93     0.34     1.63
 HUB     36.29    10.17     6.50     3.67     0.93     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   361.7041   164.3956  322.1862  1089.9413     0.3319    -0.1632     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.4230     6.8854   501.2751   487.4606    10.5823    27.0330    30.6000     3.5670

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   316.4260    67.0846   309.2331  1092.6118     0.2896     0.0994     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4209     7.0069   503.7347   487.2104   491.5697     0.0146     0.2571

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   327.6678     0.0000   327.6678  1091.9766     0.3001     0.1501     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9661	503.1551	487.3332	0.0000	0.0600	0.0410	0.0120

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8718	7.4086	1.0548	511.7551	8.5367	250.3279	1.9405

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
53290.500	0.430	119.270	363151.563	0.127627E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.486 EfDer = 0.995 SH = 0.139079E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.605	1974.585	7.409	511.755	1.000	1.000	0.980

W Kg/sec = 18.002 Wdry = 39.550 WH2O = 0.055 lbm/sec H2O = 0.844g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.056	1987.938	1.379	0.249	53.393	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62822.516	31059.059	2.385	545.479	228.683	424.468	1.856

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	276.40	-0.10	276.40	0.25	0.40	348.16
MEAN	17.74	0.00	-0.02	276.40	-0.10	276.40	0.25	0.38	
HUB	15.05	0.00	-0.02	276.40	-0.10	276.40	0.25	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.37	46.36	5.01	345.84	442.80	7.09	505.64	487.37	10.37
MEAN	47.89	43.40	4.49	305.66	412.17	7.09	505.64	487.37	10.37
HUB	43.19	38.84	4.35	259.33	379.08	7.09	505.64	487.37	10.37

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	325.67	130.88	298.21	1099.81	0.30	2.26	1.98	8.75
MEAN	17.51	333.21	147.30	298.88	1099.34	0.30	2.34	2.07	6.78
HUB	14.85	360.86	200.95	299.74	1098.88	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	341.36	365.01	210.47	0.33	2594.70	0.92	0.91		
MEAN	301.66	336.39	154.36	0.31	2580.41	0.92	0.91	0.91	1.32
HUB	255.89	304.73	54.94	0.28	2985.47	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.76	1.05	7.31	518.91	1.01	510.42	491.32	9.23
MEAN	7.76	1.05	7.28	518.87	1.01	509.99	491.35	9.35
HUB	7.81	1.05	7.26	519.99	1.02	509.57	492.07	9.47

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	23.70	35.21	31.50	3.71	0.93	0.28	1.40
MEAN	26.24	27.32	23.50	3.82	0.92	0.29	1.62
HUB	33.84	10.39	6.50	3.89	0.92	0.33	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	367.8047	148.2668	336.5966	1097.6442	0.3351	-0.1760	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.7696	7.1965	508.4312	491.7817	9.8615	23.7729	31.5000	7.7271

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	336.2635	73.3536	328.1652	1099.5620	0.3058	0.0038	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.7646	7.2837	510.2090	491.5883	451.3937	0.0202	0.2149

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	342.0755	0.0000	342.0755	1099.2170	0.3112	0.0946	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.2507	509.8938	491.6694	0.0000	0.0600	0.0563	-0.0631

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8424	7.7469	1.0457	519.2603	7.5054	270.8968	2.1000

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
46885.754	0.402	104.936	365812.375	0.148755E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 1.895 EfDer = 0.975 SH = 0.160854E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.605	1974.585	7.747	519.260	1.000	1.000	0.980

W Kg/sec = 18.002 Wdry = 39.541 WH2O = 0.064 lbm/sec H2O = 1.005g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
75.193	1973.520	1.379	0.250	53.400	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
61069.125	31056.395	2.330	513.330	220.326	395.845	1.797

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	285.52	-0.10	285.52	0.26	0.40	331.69
MEAN	16.97	0.00	-0.02	285.52	-0.10	285.52	0.26	0.37	
HUB	14.32	0.00	-0.02	285.52	-0.10	285.52	0.26	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.30	46.36	2.94	331.88	437.87	7.40	512.74	491.64	9.60
MEAN	45.70	43.80	1.90	292.43	408.77	7.40	512.74	491.64	9.60
HUB	40.85	37.84	3.01	246.76	377.43	7.40	512.74	491.64	9.60

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	325.52	107.38	307.30	1106.15	0.29	2.16	1.89	8.34
MEAN	16.57	332.41	125.88	307.65	1105.94	0.30	2.24	1.97	6.35
HUB	13.89	358.16	182.41	308.23	1105.73	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	325.33	376.75	217.96	0.34	2029.14	0.92	0.89		
MEAN	285.59	346.64	159.71	0.31	2087.95	0.92	0.89	0.89	1.27
HUB	239.35	313.44	56.94	0.28	2535.06	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.02	1.04	7.56	524.85	1.01	516.38	494.66	8.85
MEAN	8.03	1.04	7.55	525.02	1.01	516.18	494.77	8.90
HUB	8.09	1.04	7.53	526.25	1.01	515.99	495.52	8.95

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	19.26	35.35	31.50	3.85	0.93	0.23	1.40
MEAN	22.25	27.44	23.50	3.94	0.91	0.25	1.62
HUB	30.62	10.47	6.50	3.97	0.91	0.29	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.975	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	361.0570	126.5859	338.1393	1104.6047	0.3269	-0.1437	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0420	7.4763	514.9458	495.1533	9.2820	20.5239	32.4000	11.8761

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	344.5693	77.2768	335.7921	1105.6029	0.3117	-0.0585	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.0330     7.5172   515.8766   495.0463   432.2457     0.0280     0.1784

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   342.2926     0.0000   342.2926  1105.7339     0.3096     0.0409     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.4995   516.0021   495.0544     0.0000     0.0600     0.0799    -0.0939

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.7746     8.0070     1.0336   525.3737     6.1137   311.3334     2.4134

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  38219.277       0.361      85.539  379067.406   0.170852E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-0.506   EfDer =  0.942    SH =  0.183839E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     39.605    1974.585       8.007     525.374       1.000       1.000       0.980
 W Kg/sec =  18.002  Wdry =  39.532  WH2O = 0.073  lbm/sec   H2O =   1.175g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.177    1962.004       1.379       0.250      53.408      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59705.633   31053.580       2.377     509.668     214.451     384.739       1.794

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   281.15    -0.10   281.15     0.25     0.38   313.66
 MEAN   15.91     0.00    -0.02   281.15    -0.10   281.15     0.25     0.35
 HUB    13.07     0.00    -0.02   281.15    -0.10   281.15     0.25     0.32

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    48.32    47.36     0.96   315.68   422.80     7.66   519.05   494.99     9.04
 MEAN   44.29    44.80    -0.51   274.20   392.79     7.66   519.05   494.99     9.04
 HUB    38.71    38.84    -0.13   225.22   360.29     7.66   519.05   494.99     9.04

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   316.89    91.92   303.26  1111.99     0.28     2.05     1.78     7.43
 MEAN   15.50   322.24   108.02   303.60  1111.78     0.29     2.13     1.86     5.75
 HUB    12.59   343.81   160.24   304.18  1111.56     0.31     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   309.13   373.03   217.22     0.34  1650.76     0.92     0.86
 MEAN  267.05   342.73   159.02     0.31  1675.63     0.92     0.86     0.86     1.24
 HUB   216.94   309.42    56.71     0.28  2018.64     0.92     0.86

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     8.23     1.03     7.78   529.92     1.01   521.89   497.40     8.54
 MEAN    8.23     1.03     7.77   529.99     1.01   521.69   497.46     8.59
 HUB     8.28     1.03     7.75   530.94     1.01   521.49   498.03     8.63

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    16.86    35.61    31.50     4.11     0.93     0.19     1.40
 MEAN   19.59    27.65    23.50     4.15     0.90     0.21     1.64
 HUB    27.78    10.56     6.50     4.06     0.90     0.25     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.942       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   363.7902   110.0035   346.7601  1109.6467     0.3278    -0.2480     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.2346     7.6522   519.7037   497.8928     9.1268    17.6007    33.0000    15.3993
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   360.1368    82.2376   350.6216  1109.8745     0.3245    -0.2687     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.2096     7.6403   519.9153   497.8381   410.5396     0.0725     0.1462

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   350.3824     0.0000   350.3824  1110.4645     0.3155     0.0070     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.6563   520.4695   497.8106     0.0000     0.0600     0.1033    -0.2351

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6845     8.1950     1.0235   530.2822     4.9087   362.7292     2.8119

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  30709.229       0.321      68.731  401722.531   0.194281E-02

Melt Ratio at Stator LE, Throat, TE
0.30299E-02 0.30299E-02 0.30512E-02
 trTOT =     1.0791   Tt4 =   530.2822   T1  =   491.4111

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    242725.19    543.2468     87.0091      1.2583      0.8246      9.2535     1.0791     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 20047 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.667   EfDer =  0.999    SH =  0.105739E-02

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     48.642    1797.020       7.939     506.409       1.000       1.000       0.980
  W Kg/sec =  22.110  Wdry =  48.590  WH2O = 0.051  lbm/sec   H2O =   0.706g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     88.992    1818.697       1.380       0.249      53.383      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  70208.000   38150.992       3.190     831.557     260.675     619.754       2.377

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   202.63    -0.07   202.63     0.19     0.35   327.41
 MEAN    17.06     0.00    -0.02   202.63    -0.07   202.63     0.19     0.31
 HUB     12.51     0.00    -0.02   202.63    -0.07   202.63     0.19     0.26

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.95    50.47     7.48   323.52   381.80     7.75   503.12   484.81     9.49
 MEAN    52.87    47.20     5.67   267.54   335.67     7.75   503.12   484.81     9.49
 HUB     44.08    38.62     5.46   196.18   282.09     7.75   503.12   484.81     9.49

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.08   172.76   280.09  1095.82      0.30     7.29     6.52    16.04
 MEAN    18.04   343.80   197.75   281.24  1094.97      0.31     7.43     6.80    12.53
 HUB     15.00   387.23   263.54   283.72  1093.26      0.35     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    323.52   318.09   150.76     0.29  3565.43      0.92     0.91
 MEAN   282.84   293.83    85.09     0.27  3567.84      0.92     0.91     0.91     1.28
 HUB    235.23   285.13    28.31     0.26  3953.97      0.92     0.91

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP       8.42     1.06     7.91   515.37     1.02   506.69   490.48     9.65
 MEAN      8.42     1.06     7.87   515.38     1.02   505.90   490.56     9.89
 HUB       8.47     1.07     7.77   516.35     1.02   504.33   491.34    10.37

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.67    28.29    24.20     4.09     0.93     0.29     1.80
 MEAN    35.11    16.83    12.70     4.13     0.92     0.26     2.22
 HUB     42.89    -5.70    -9.30     3.60     0.92     0.16     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   360.7457   197.3676   301.9660  1094.2592     0.3297    -0.0733     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     8.4274     7.8247   505.2738   490.8895    10.2605    33.1690    35.4000     2.2310

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   307.1304    75.1335   297.7986  1097.3555     0.2799     0.2305     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     8.4254     7.9854   508.1425   490.6383   554.9116     0.0135     0.3506

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   304.8211     0.0000   304.8211  1097.4689     0.2777     0.2546     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     7.9782   508.2562   490.7684     0.0000     0.0600     0.0383     0.2181
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8730     8.4110     1.0594   515.6976     9.2889   222.2218     1.7226

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57989.602       0.554     159.402  473451.094   0.131289E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.226   EfDer =  0.987    SH =  0.155659E-02

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     48.642    1797.020       8.411     515.697       1.000       1.000       0.980
 W Kg/sec =  22.110  Wdry =  48.566  WH2O = 0.076  lbm/sec   H2O =   1.064g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     84.766    1802.243       1.379       0.250      53.399      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68507.922   38143.492       2.377     590.487     248.369     468.502       1.886

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   278.44    -0.10   278.44     0.25     0.39   323.19
 MEAN    18.08     0.00    -0.02   278.44    -0.10   278.44     0.25     0.36
 HUB     15.21     0.00    -0.02   278.44    -0.10   278.44     0.25     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.18    46.36     2.82   322.26   425.96     8.05   509.49   491.27    11.40
 MEAN    45.53    42.30     3.23   283.50   397.44     8.05   509.49   491.27    11.40
 HUB     40.60    37.84     2.76   238.52   366.70     8.05   509.49   491.27    11.40

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   321.78   106.68   303.58  1102.40      0.29     2.33     2.04     9.02
 MEAN    18.01   328.99   126.12   303.85  1102.25      0.30     2.40     2.13     7.35
 HUB     15.22   355.37   183.49   304.33  1102.10      0.32     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    320.23   371.16   213.54     0.34  2180.47      0.92     0.90
 MEAN   282.43   341.70   156.31     0.31  2273.23      0.92     0.90      0.90     1.25
 HUB    238.73   309.30    55.23     0.28  2794.75      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.71     1.04     8.21   521.17     1.01   512.88   494.36    10.55
 MEAN     8.72     1.04     8.21   521.40     1.01   512.74   494.53    10.60
 HUB      8.79     1.05     8.19   522.71     1.01   512.61   495.34    10.63

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     19.36    35.12    31.50     3.62     0.93     0.22     1.40
 MEAN    22.54    27.22    23.50     3.72     0.92     0.24     1.63
 HUB     31.09    10.29     6.50     3.79     0.92     0.28     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.987       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   365.5287   126.4785   342.9495  1100.4369     0.3322    -0.1932     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.7352     8.1016   511.0717   494.9782    11.1944    20.2438    30.6000    10.3562

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   338.7641    71.8204   331.0633  1102.0609     0.3074    -0.0414     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.7271     8.1813   512.5798   494.7930   491.5697     0.0251     0.1628

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   351.3944     0.0000   351.3944  1101.3069     0.3191     0.0261     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1181	511.8829	494.9166	0.0000	0.0600	0.0705	-0.1590

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8008	8.7027	1.0347	521.7606	6.0632	301.9909	2.3410

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
37899.855	0.370	104.179	439105.344	0.164823E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =-0.156 EfDer = 0.947 SH = 0.175819E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
48.642	1797.020	8.703	521.760	1.000	1.000	0.980

W Kg/sec = 22.110 Wdry = 48.556 WH2O = 0.086 lbm/sec H2O = 1.225g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
82.405	1791.741	1.379	0.250	53.405	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
67248.844	38140.461	2.259	545.479	241.485	424.468	1.758

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	295.88	-0.10	295.88	0.27	0.39	313.80
MEAN	17.74	0.00	-0.02	295.88	-0.10	295.88	0.27	0.37	
HUB	15.05	0.00	-0.02	295.88	-0.10	295.88	0.27	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	46.78	46.36	0.42	314.74	432.05	8.29	514.76	494.83	10.92
MEAN	43.24	43.40	-0.16	278.17	406.18	8.29	514.76	494.83	10.92
HUB	38.59	38.84	-0.25	236.01	378.54	8.29	514.76	494.83	10.92

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	333.50	81.41	323.41	1106.68	0.30	2.26	1.98	8.75
MEAN	17.51	340.30	106.65	323.15	1106.97	0.31	2.34	2.07	6.78
HUB	14.85	366.48	172.73	323.22	1107.26	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	310.66	396.42	229.25	0.36	1614.72	0.92	0.87		
MEAN	274.54	364.16	167.88	0.33	1868.95	0.92	0.87	0.87	1.19
HUB	232.88	328.77	60.15	0.30	2566.60	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.92	1.02	8.38	525.81	1.01	516.92	497.11	10.47
MEAN	8.95	1.03	8.39	526.45	1.01	517.19	497.46	10.38
HUB	9.05	1.04	8.39	528.20	1.01	517.46	498.47	10.28

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	14.13	35.33	31.50	3.83	0.93	0.15	1.40
MEAN	18.27	27.45	23.50	3.95	0.90	0.18	1.62
HUB	28.12	10.54	6.50	4.04	0.90	0.25	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.947	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	380.0854	107.3536	364.6096	1104.9034	0.3440	-0.2076	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.9661	8.2711	515.2683	497.9616	11.0290	16.4062	31.5000	15.0938

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	366.5066	79.9509	357.6800	1105.7749	0.3314	-0.1465	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.9501	8.3038	516.0790	497.8433	451.3937	0.0373	0.1183

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   373.7532     0.0000   373.7532  1105.3130     0.3381    -0.0386     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2442   515.6505   497.9072     0.0000     0.0600     0.1012    -0.2487

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6788     8.9129     1.0242   526.8182     5.0576   342.6302     2.6560

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  31634.492       0.328      86.957  444688.406   0.184846E-02

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =-3.239   EfDer =  0.889    SH =  0.195806E-02

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     48.642    1797.020       8.913     526.818       1.000       1.000       0.980
 W Kg/sec =  22.110  Wdry =  48.547  WH2O = 0.095  lbm/sec   H2O =   1.379g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.850    1783.120       1.379       0.250      53.412      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66532.984   38137.449       2.166     513.330     236.959     395.845       1.671

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   311.06    -0.11   311.06     0.28     0.39   299.69
 MEAN    16.97     0.00    -0.02   311.06    -0.11   311.06     0.28     0.37
 HUB     14.32     0.00    -0.02   311.06    -0.11   311.06     0.28     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     44.17    46.36    -2.19   302.03   433.65     8.45   519.09   497.71    10.60
 MEAN    40.56    43.80    -3.24   266.13   409.44     8.45   519.09   497.71    10.60
 HUB     35.84    37.84    -2.00   224.57   383.72     8.45   519.09   497.71    10.60

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   343.60    54.21   339.30  1109.89     0.31     2.16     1.89     8.34
 MEAN    16.57   348.66    82.97   338.64  1110.53     0.31     2.24     1.97     6.35
 HUB     13.89   371.98   154.30   338.47  1111.15     0.33     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    296.08   416.68   241.87     0.38  1025.48     0.92     0.81
 MEAN   259.91   382.08   176.94     0.34  1376.98     0.92     0.81     0.81     1.14
 HUB    217.82   344.38    63.52     0.31  2144.75     0.92     0.81

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.04     1.01     8.47   529.39     1.00   519.95   499.21    10.53
 MEAN     9.09     1.02     8.50   530.27     1.01   520.55   499.65    10.34
 HUB      9.19     1.03     8.51   532.19     1.01   521.14   500.69    10.14

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      9.08    35.48    31.50     3.98     0.93     0.08     1.40
 MEAN    13.77    27.59    23.50     4.09     0.89     0.13     1.62
 HUB     24.51    10.63     6.50     4.13     0.89     0.20     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.889       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   382.2029    83.4383   372.9840  1108.7993     0.3447    -0.1705     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.0987     8.3908   518.9446   500.0952    10.8581    12.6097    32.4000    19.7903

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   382.4800    85.7791   372.7371  1108.7842     0.3450    -0.2005     2.2705
```

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.0753	8.3682	518.9276	500.0745	432.2457	0.0481	0.0821

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	380.8919	0.0000	380.8919	1108.8867	0.3435	-0.0895	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.3275	519.0242	500.0279	0.0000	0.0600	0.1303	-0.2670

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.4766	9.0249	1.0126	530.6155	3.7985	422.2346	3.2731

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
23773.406	0.271	65.348	463308.031	0.203938E-02

Melt Ratio at Stator LE, Throat, TE
0.21890E-01 0.23913E-01 0.30326E-01

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-6.101 EfDer = 0.826 SH = 0.214232E-02

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
48.642	1797.020	9.025	530.615	1.000	1.000	0.980

W Kg/sec = 22.110 Wdry = 48.538 WH2O = 0.104 lbm/sec H2O = 1.517g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
80.134	1776.728	1.378	0.250	53.418	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
66179.219	38134.680	2.170	509.668	234.888	384.739	1.638

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	311.63	-0.11	311.63	0.28	0.38	284.04
MEAN	15.91	0.00	-0.02	311.63	-0.11	311.63	0.28	0.36	
HUB	13.07	0.00	-0.02	311.63	-0.11	311.63	0.28	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	42.68	47.36	-4.68	287.29	423.93	8.55	522.86	499.72	10.28
MEAN	38.70	44.80	-6.10	249.55	399.30	8.55	522.86	499.72	10.28
HUB	33.35	38.84	-5.49	204.96	373.05	8.55	522.86	499.72	10.28

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	342.35	36.20	340.43	1112.97	0.31	2.05	1.78	7.43
MEAN	15.50	345.71	63.79	339.77	1113.68	0.31	2.13	1.86	5.75
HUB	12.59	364.77	133.03	339.65	1114.36	0.33	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	281.33	419.51	245.13	0.38	651.42	0.92	0.76		
MEAN	243.03	384.15	179.24	0.34	990.31	0.92	0.76	0.76	1.11
HUB	197.44	345.70	64.40	0.31	1676.29	0.92	0.76		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.10	1.01	8.53	532.25	1.00	522.89	500.75	10.42
MEAN	9.14	1.01	8.56	533.09	1.00	523.55	501.15	10.21
HUB	9.22	1.02	8.57	534.81	1.01	524.19	502.04	10.01

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	6.07	35.76	31.50	4.26	0.93	0.04	1.40
MEAN	10.63	27.81	23.50	4.31	0.87	0.09	1.64
HUB	21.39	10.74	6.50	4.24	0.87	0.16	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.826	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	394.8201	64.9607	389.4394	1110.8905	0.3554	-0.2824	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1434	8.3896	520.9359	501.7089	11.0192	9.4701	33.0000	23.5299

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   407.7911    93.1194   397.0168  1110.0089     0.3674    -0.4380     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.0892     8.2915   520.1042   501.7593   410.5396     0.1101     0.0550

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   396.6086     0.0000   396.6086  1110.7760     0.3571    -0.0999     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.3144   520.8216   501.6620     0.0000     0.0600     0.1446    -0.4000

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.2537     9.0685     1.0048   533.3826     2.7694   533.4933     4.1356

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  17342.613       0.219      47.671  493265.500   0.221779E-02

Melt Ratio at Stator LE, Throat, TE
0.82500E-01 0.86728E-01 0.98848E-01
 trTOT =     1.0533   Tt4 =   533.3826   T1  =   506.4091

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    168639.95    463.5572     88.9916      1.1423      0.6988      5.6671      1.0533     37.3740
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25µm, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 10% 39000 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.160   EfDer =  0.957    SH =  0.757291E-04

    W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
      26.808    2406.177       4.265     457.733       1.000       1.000       0.980
  W Kg/sec =  12.185  Wdry =  26.806  WH2O = 0.002  lbm/sec   H2O =   0.030g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
      86.805    2561.392       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
   65010.715   21034.178       3.273     831.557     254.091     619.754       2.439

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   187.63    -0.06   187.63     0.18     0.45   461.12
 MEAN    17.06     0.00    -0.02   187.63    -0.06   187.63     0.18     0.39
 HUB     12.51     0.00    -0.02   187.63    -0.06   187.63     0.18     0.31

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.58    50.47    16.11   433.19   472.13      4.17   454.90   448.33     2.90
 MEAN    62.36    47.20    15.16   358.23   404.45      4.17   454.90   448.33     2.90
 HUB     54.47    38.62    15.85   262.68   322.86      4.17   454.90   448.33     2.90

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   389.11   297.17   251.19  1051.48      0.37     7.29     6.52    16.04
 MEAN    18.04   394.31   301.19   254.48  1048.45      0.38     7.43     6.80    12.53
 HUB     15.00   427.84   340.50   259.05  1044.69      0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    433.19   285.65   136.01     0.27  6132.02      0.92     0.88
 MEAN   378.72   266.03    77.53     0.25  5433.42      0.92     0.88     0.88     1.74
 HUB    314.97   260.31    25.53     0.25  5108.29      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.91     1.15     4.47   478.44     1.05   466.27   462.42     2.23
 MEAN     4.83     1.13     4.39   476.08     1.04   463.58   460.94     2.47
 HUB      4.80     1.12     4.28   474.99     1.04   460.26   460.28     2.81

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.79    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    49.81    16.94    12.70     4.24     0.95     0.51     2.22
 HUB     52.74    -5.63    -9.30     3.67     0.95     0.38     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.957       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   406.0353   300.6079   272.9461  1048.0632     0.3874    -0.0369     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8415     4.3711   463.2456   461.2161     2.5580    47.7612    35.4000   -12.3612

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   270.9535    66.2835   262.7209  1056.3455     0.2565     0.5081     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8301     4.6168   470.5998   461.0930   554.9116     0.0345     0.6002

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   269.7996     0.0000   269.7996  1056.3905     0.2554     0.4801     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.5969	470.6497	461.0742	0.0000	0.0600	0.0831	0.4655

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8200	4.8074	1.1273	476.5031	18.7717	169.4341	1.3134

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
116724.781	0.622	176.831	281204.188	0.104176E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =14.690 EfDer = 0.961 SH = 0.135903E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.808	2406.177	4.807	476.503	1.000	1.000	0.980

W Kg/sec = 12.185 Wdry = 26.804 WH2O = 0.004 lbm/sec H2O = 0.058g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.567	2510.457	1.381	0.248	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60689.570	21033.680	2.567	590.487	229.989	468.502	2.037

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	246.67	-0.08	246.67	0.23	0.47	450.19
MEAN	18.08	0.00	-0.02	246.67	-0.08	246.67	0.23	0.43	
HUB	15.21	0.00	-0.02	246.67	-0.08	246.67	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.25	46.36	13.89	431.51	497.11	4.63	471.61	461.17	2.67
MEAN	56.99	42.30	14.69	379.60	452.78	4.63	471.61	461.17	2.67
HUB	52.33	37.84	14.49	319.38	403.61	4.63	471.61	461.17	2.67

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	357.99	246.34	259.76	1070.36	0.33	2.33	2.04	9.02
MEAN	18.01	358.03	243.64	262.35	1067.96	0.34	2.40	2.13	7.35
HUB	15.22	379.96	272.07	265.24	1065.58	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	428.78	317.42	182.44	0.30	5031.92	0.92	0.88		
MEAN	378.17	294.84	134.53	0.28	4389.40	0.92	0.88	0.88	1.69
HUB	319.65	269.47	47.58	0.25	4143.01	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.38	1.12	4.98	493.49	1.04	483.19	471.46	1.82
MEAN	5.30	1.10	4.91	491.32	1.03	481.02	470.22	1.97
HUB	5.27	1.10	4.83	490.49	1.03	478.88	469.77	2.12

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	43.48	35.08	31.50	3.58	0.93	0.54	1.40
MEAN	42.88	27.15	23.50	3.65	0.95	0.51	1.63
HUB	45.73	10.17	6.50	3.67	0.95	0.50	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.961	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	383.3097	244.3196	295.3544	1066.7676	0.3593	-0.1092	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3125	4.8646	479.9571	470.4999	2.0531	39.5978	30.6000	-8.9978

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	285.8075	60.5932	279.3105	1072.5791	0.2665	0.3583	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.3067	5.0544	485.2022	470.4005	491.5697	0.0242	0.4558

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	296.2314	0.0000	296.2314	1072.0310	0.2763	0.3494	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0211	484.7143	470.3872	0.0000	0.0600	0.0628	0.2767

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8366	5.2909	1.1006	491.7691	15.2670	191.1124	1.4815

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
94957.875	0.516	143.855	255351.516	0.148324E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.696 EfDer = 0.976 SH = 0.165413E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.808	2406.177	5.291	491.769	1.000	1.000	0.980

W Kg/sec = 12.185 Wdry = 26.803 WH2O = 0.004 lbm/sec H2O = 0.075g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.522	2471.184	1.381	0.248	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56908.867	21033.436	2.569	545.479	212.300	424.468	1.999

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	250.39	-0.09	250.39	0.23	0.46	432.80
MEAN	17.74	0.00	-0.02	250.39	-0.09	250.39	0.23	0.42	
HUB	15.05	0.00	-0.02	250.39	-0.09	250.39	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.29	46.36	12.93	421.43	490.27	5.10	486.73	470.41	1.87
MEAN	56.10	43.40	12.70	372.47	448.88	5.10	486.73	470.41	1.87
HUB	51.62	38.84	12.78	316.02	403.26	5.10	486.73	470.41	1.87

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	350.06	230.30	263.64	1085.88	0.32	2.26	1.98	8.75
MEAN	17.51	352.07	230.73	265.92	1083.83	0.32	2.34	2.07	6.78
HUB	14.85	375.91	263.15	268.44	1081.81	0.35	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	415.97	322.46	185.67	0.30	4563.98	0.92	0.89		
MEAN	367.60	299.08	136.87	0.28	4040.84	0.92	0.89	0.89	1.64
HUB	311.82	272.82	48.67	0.25	3909.07	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.85	1.11	5.45	507.18	1.03	497.33	478.96	1.36
MEAN	5.78	1.09	5.38	505.41	1.03	495.45	478.03	1.45
HUB	5.76	1.09	5.31	504.97	1.03	493.61	477.82	1.54

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.14	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	40.95	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.43	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	378.5036	232.2454	298.8763	1082.5999	0.3496	-0.1171	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7936	5.3298	494.3347	478.2858	1.5122	37.8494	31.5000	-6.3494

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	294.1625	64.1696	287.0781	1087.5806	0.2705	0.3065	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7899	5.5066	498.8949	478.2044	451.3937	0.0188	0.4304

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	299.1237	0.0000	299.1237	1087.3138	0.2751	0.3339	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4847	498.6581	478.1913	0.0000	0.0600	0.0501	0.2543

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8570	5.7768	1.0918	505.8499	14.0818	196.5973	1.5240

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
87603.977	0.506	132.715	253743.719	0.180114E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.102 EfDer = 0.986 SH = 0.201317E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.808	2406.177	5.777	505.850	1.000	1.000	0.980

W Kg/sec = 12.185 Wdry = 26.803 WH2O = 0.005 lbm/sec H2O = 0.097g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
67.367	2436.547	1.381	0.249	53.355	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53577.164	21033.139	2.603	513.330	197.217	395.845	2.007

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	250.49	-0.09	250.49	0.23	0.44	409.51
MEAN	16.97	0.00	-0.02	250.49	-0.09	250.49	0.23	0.40	
HUB	14.32	0.00	-0.02	250.49	-0.09	250.49	0.23	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.23	46.36	11.87	404.42	475.78	5.57	500.81	478.21	1.42
MEAN	54.90	43.80	11.10	356.35	435.65	5.57	500.81	478.21	1.42
HUB	50.21	37.84	12.37	300.69	391.42	5.57	500.81	478.21	1.42

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	337.11	210.93	262.97	1099.78	0.31	2.16	1.89	8.34
MEAN	16.57	339.04	211.45	265.02	1097.92	0.31	2.24	1.97	6.35
HUB	13.89	361.40	243.27	267.26	1096.10	0.33	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	396.44	321.82	185.51	0.29	3983.99	0.92	0.90		
MEAN	348.02	298.14	136.57	0.27	3505.99	0.92	0.90	0.90	1.60
HUB	291.66	271.61	48.39	0.25	3380.22	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.29	1.09	5.90	519.30	1.03	510.16	485.16	1.10
MEAN	6.23	1.08	5.84	517.68	1.02	508.44	484.37	1.16
HUB	6.21	1.08	5.77	517.26	1.02	506.76	484.18	1.22

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.73	35.20	31.50	3.70	0.93	0.48	1.40
MEAN	38.58	27.26	23.50	3.76	0.94	0.46	1.62
HUB	42.31	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.986	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	360.1203	212.6379	290.6402	1097.0609	0.3283	-0.0927	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.2425	5.7992	507.6569	484.5787	1.1959	36.1899	32.4000	-3.7899

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   291.9123    65.4674   284.4764  1100.9139     0.2652     0.2691     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2406     5.9467   511.2309   484.5188   432.2457     0.0146     0.4088

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   289.5780     0.0000   289.5780  1101.0233     0.2630     0.3195     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9408   511.3399   484.5050     0.0000     0.0600     0.0415     0.2547

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8702     6.2295     1.0784   518.0785    12.2295   212.0030     1.6434

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  76097.578       0.484     115.283  259594.844   0.219144E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.642   EfDer =  0.993    SH =  0.245945E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.808    2406.177       6.230     518.078       1.000       1.000       0.980
 W Kg/sec =  12.185  Wdry =  26.801  WH2O = 0.007  lbm/sec   H2O =   0.125g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     63.221    2407.620       1.381       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50735.617   21032.771       2.754     509.668     185.089     384.739       2.079

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   238.91    -0.08   238.91     0.22     0.41   384.90
 MEAN    15.91     0.00    -0.02   238.91    -0.08   238.91     0.22     0.37
 HUB     13.07     0.00    -0.02   238.91    -0.08   238.91     0.22     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.16    47.36    10.80   384.68   452.90      6.03   513.49   484.53     1.16
 MEAN    54.44    44.80     9.64   334.14   410.83      6.03   513.49   484.53     1.16
 HUB     48.97    38.84    10.13   274.44   363.93      6.03   513.49   484.53     1.16

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   320.10   198.15   251.40  1112.27      0.29     2.05     1.78     7.43
 MEAN    15.50   319.20   194.10   253.40  1110.35      0.29     2.13     1.86     5.75
 HUB     12.59   335.91   218.03   255.54  1108.46      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    376.70   308.35   178.55     0.28  3556.34      0.92     0.91
 MEAN   325.42   285.40   131.31     0.26  3009.47      0.92     0.91     0.91     1.59
 HUB    264.36   259.70    46.34     0.23  2746.03      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.72     1.08     6.35   530.08     1.02   521.85   490.39     0.95
 MEAN     6.64     1.07     6.28   528.23     1.02   520.05   489.53     1.00
 HUB      6.60     1.06     6.20   527.34     1.02   518.28   489.12     1.05

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.25    35.38    31.50     3.88     0.93     0.47     1.40
 MEAN    37.45    27.39    23.50     3.89     0.94     0.45     1.64
 HUB     40.47    10.28     6.50     3.78     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   349.6348   197.6640   288.3980  1108.9291     0.3153    -0.1729     2.0437
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    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6470     6.2100   518.7302   489.6932     1.0432    34.4262    33.0000    -1.4262

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   294.7655    67.3100   286.9775  1111.9602     0.2651     0.1509     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6450     6.3323   521.5709   489.6436   410.5396     0.0252     0.3844

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   286.7317     0.0000   286.7317  1112.3530     0.2578     0.3077     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3445   521.9461   489.6415     0.0000     0.0600     0.0373     0.1829

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8792     6.6404     1.0660   528.5513    10.4736   231.6919     1.7961

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  65188.008       0.459      98.756  272157.563   0.267726E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1547   Tt4 =   528.5513   T1  =   457.7325

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    440572.19    667.4399     86.8047      1.5571      0.8401     15.1597      1.1547     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 38334 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.262   EfDer =  0.956    SH =  0.710167E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.833    2330.941       4.199     451.559       1.000       1.000       0.980
  W Kg/sec =  11.742  Wdry =  25.831  WH2O = 0.002  lbm/sec   H2O =   0.028g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     84.375    2498.209       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  62705.395   20269.203       3.367     831.557     246.980     619.754       2.509

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   180.98    -0.06   180.98     0.18     0.44   449.74
 MEAN    17.06     0.00    -0.02   180.98    -0.06   180.98     0.18     0.38
 HUB     12.51     0.00    -0.02   180.98    -0.06   180.98     0.18     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.67    50.47    16.20   419.64   457.06     4.11   448.92   443.94     3.59
 MEAN    62.46    47.20    15.26   347.03   391.44     4.11   448.92   443.94     3.59
 HUB     54.59    38.62    15.97   254.47   312.31     4.11   448.92   443.94     3.59

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   376.85   288.16   242.86  1043.93      0.36     7.29     6.52    16.04
 MEAN    18.04   381.73   292.00   245.87  1041.07      0.37     7.43     6.80    12.53
 HUB     15.00   413.83   329.74   250.05  1037.53      0.40     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    419.64   276.16   131.49     0.26  5945.94      0.92     0.87
 MEAN   366.88   257.02    74.87     0.25  5267.66      0.92     0.87     0.87     1.75
 HUB    305.12   251.26    24.63     0.24  4946.95      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.80     1.14     4.39   471.01     1.04   459.59   457.85     2.74
 MEAN     4.73     1.13     4.32   468.79     1.04   457.07   456.38     3.03
 HUB      4.70     1.12     4.21   467.75     1.04   453.97   455.71     3.44

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.88    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    49.90    16.94    12.70     4.24     0.95     0.52     2.22
 HUB     52.83    -5.62    -9.30     3.68     0.95     0.38     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.956       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   393.0082   291.4371   263.6662  1040.7087     0.3776    -0.0369     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.7381     4.2993   456.7627   456.6496     3.1298    47.8640    35.4000   -12.4640

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth          Machth     cp 2-Th     Stat Chord
   18.0711   262.2315    64.1498   254.2639  1048.5262     0.2501     0.5091     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.7278     4.5290   463.6540   456.5348   554.9116     0.0339     0.6008

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   18.0829   261.0894     0.0000   261.0894  1048.5703     0.2490     0.4800     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.5099   463.7017   456.5193     0.0000     0.0600     0.0837     0.4653
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8188     4.7061     1.1207   469.1836    17.6256   169.0044     1.3101

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 109593.594       0.622     159.989  273551.438   0.948329E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.710   EfDer =  0.961    SH =  0.121340E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.833    2330.941       4.706     469.183       1.000       1.000       0.980
 W Kg/sec =  11.742  Wdry =  25.830  WH2O = 0.003  lbm/sec   H2O =   0.051g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.744    2450.857       1.381       0.248      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58746.426   20268.803       2.628     590.487     224.650     468.502       2.085

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   238.77    -0.08   238.77     0.23     0.46   439.51
 MEAN    18.08     0.00    -0.02   238.77    -0.08   238.77     0.23     0.42
 HUB     15.21     0.00    -0.02   238.77    -0.08   238.77     0.23     0.37

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.27    46.36    13.91   418.01   481.47     4.54   464.60   456.61     3.21
 MEAN    57.01    42.30    14.71   367.74   438.52     4.54   464.60   456.61     3.21
 HUB     52.35    37.84    14.51   309.39   390.88     4.54   464.60   456.61     3.21

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   346.93   238.37   252.06  1061.75     0.33     2.33     2.04     9.02
 MEAN    18.01   346.98   235.90   254.45  1059.48     0.33     2.40     2.13     7.35
 HUB     15.22   368.18   263.54   257.11  1057.25     0.35     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    415.37   308.00   177.00     0.29  4869.28     0.92     0.88
 MEAN   366.35   285.94   130.45     0.27  4249.96     0.92     0.88     0.88     1.69
 HUB    309.66   261.21    46.12     0.25  4013.12     0.92     0.88

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.24     1.11     4.87   485.11     1.03   475.43   466.81     2.21
 MEAN     5.17     1.10     4.80   483.09     1.03   473.41   465.58     2.38
 HUB      5.14     1.09     4.73   482.31     1.03   471.41   465.13     2.56

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.40    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN    42.83    27.14    23.50     3.64     0.95     0.51     1.63
 HUB     45.71    10.17     6.50     3.67     0.95     0.50     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.961       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   371.4385   236.5582   286.3683  1058.3558     0.3510    -0.1094     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   5.1761     4.7587   472.4097   465.8562     2.4811    39.5588    30.6000    -8.9588

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   277.4830    58.8284   271.1753  1063.8314     0.2608     0.3569     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     5.1710     4.9351   477.3119   465.7645   491.5697     0.0235     0.4543

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   287.5384     0.0000   287.5384  1063.3143     0.2704     0.3478     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9039	476.8549	465.7539	0.0000	0.0600	0.0626	0.2749

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8365	5.1561	1.0956	483.5023	14.3197	191.1253	1.4816

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
89058.492	0.516	130.011	248638.234	0.131767E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.630 EfDer = 0.976 SH = 0.146079E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.833	2330.941	5.156	483.502	1.000	1.000	0.980

W Kg/sec = 11.742 Wdry = 25.829 WH2O = 0.004 lbm/sec H2O = 0.066g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
71.107	2414.294	1.381	0.248	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55265.527	20268.607	2.621	545.479	208.154	424.468	2.039

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	243.16	-0.08	243.16	0.23	0.45	422.84
MEAN	17.74	0.00	-0.02	243.16	-0.08	243.16	0.23	0.41	
HUB	15.05	0.00	-0.02	243.16	-0.08	243.16	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.23	46.36	12.87	408.25	475.25	4.97	478.75	465.77	2.26
MEAN	56.03	43.40	12.63	360.82	435.18	4.97	478.75	465.77	2.26
HUB	51.55	38.84	12.71	306.14	391.02	4.97	478.75	465.77	2.26

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	339.51	222.31	256.60	1076.37	0.32	2.26	1.98	8.75
MEAN	17.51	341.54	222.99	258.70	1074.45	0.32	2.34	2.07	6.78
HUB	14.85	364.72	254.73	261.02	1072.56	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	402.96	313.81	180.65	0.29	4405.73	0.92	0.89		
MEAN	356.11	290.94	133.11	0.27	3905.34	0.92	0.89	0.89	1.64
HUB	302.07	265.28	47.34	0.25	3783.98	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.67	1.10	5.30	497.91	1.03	488.64	474.25	1.65
MEAN	5.61	1.09	5.24	496.28	1.03	486.90	473.34	1.76
HUB	5.60	1.09	5.17	495.88	1.03	485.18	473.14	1.86

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.91	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	40.76	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.30	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	367.2573	224.4572	290.6834	1073.2762	0.3422	-0.1178	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6220	5.1899	485.8452	473.5897	1.8318	37.6743	31.5000	-6.1743

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	286.4391	62.4847	279.5407	1077.9559	0.2657	0.3023	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6189	5.3532	490.0922	473.5147	451.3937	0.0181	0.4269

```
    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   291.2262     0.0000   291.2262  1077.7037     0.2702     0.3306     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.3328   489.8696   473.5040     0.0000     0.0600     0.0494     0.2501

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8577     5.6066     1.0874   496.6875    13.1862   197.1773     1.5285

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  82023.664       0.505     119.741  247379.250   0.158375E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =10.955   EfDer =  0.987    SH =  0.176184E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.833    2330.941       5.607     496.687       1.000       1.000       0.980
 W Kg/sec =  11.742  Wdry =  25.828  WH2O = 0.005  lbm/sec   H2O =   0.084g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     66.278    2382.033       1.381       0.249      53.354      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  52184.211   20268.367       2.646     513.330     194.025     395.845       2.040

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   243.98    -0.08   243.98     0.23     0.43   400.35
 MEAN    16.97     0.00    -0.02   243.98    -0.08   243.98     0.23     0.39
 HUB     14.32     0.00    -0.02   243.98    -0.08   243.98     0.23     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.09    46.36    11.73   391.77   461.60     5.41   491.90   473.52     1.72
 MEAN    54.76    43.80    10.96   345.21   422.79     5.41   491.90   473.52     1.72
 HUB     50.06    37.84    12.22   291.29   380.03     5.41   491.90   473.52     1.72

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   327.25   203.04   256.64  1089.46     0.30     2.16     1.89     8.34
 MEAN    16.57   329.29   203.94   258.53  1087.73     0.30     2.24     1.97     6.35
 HUB     13.89   351.14   235.35   260.60  1086.03     0.32     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    384.04   314.04   181.00     0.29  3835.10     0.92     0.90
 MEAN   337.13   290.82   133.19     0.27  3381.54     0.92     0.90     0.90     1.59
 HUB    282.54   264.83    47.19     0.24  3270.28     0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.08     1.09     5.72   509.23     1.03   500.62   480.40     1.34
 MEAN     6.03     1.07     5.66   507.75     1.02   499.03   479.62     1.41
 HUB      6.01     1.07     5.60   507.38     1.02   497.47   479.45     1.48

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.35    35.19    31.50     3.69     0.93     0.48     1.40
 MEAN    38.27    27.26    23.50     3.76     0.94     0.46     1.62
 HUB     42.09    10.26     6.50     3.76     0.94     0.46     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.987       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   349.8846   205.0893   283.4742  1086.8971     0.3219    -0.0936     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.0366     5.6236   498.2784   479.8333     1.4516    35.8852    32.4000    -3.4852

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   284.9962    63.9163   277.7365  1090.5007     0.2613     0.2624     2.2705
```

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.0350	5.7587	501.5895	479.7783	432.2457	0.0141	0.4034

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	282.6978	0.0000	282.6978	1090.6079	0.2592	0.3142	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.7534	501.6942	479.7666	0.0000	0.0600	0.0408	0.2484

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8712	6.0248	1.0746	508.1174	11.4308	213.2405	1.6530

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
71117.852	0.482	103.821	253372.438	0.191180E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.423 EfDer = 0.994 SH = 0.213797E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.833	2330.941	6.025	508.117	1.000	1.000	0.980

W Kg/sec = 11.742 Wdry = 25.827 WH2O = 0.006 lbm/sec H2O = 0.107g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.383	2355.089	1.381	0.249	53.355	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49546.383	20268.068	2.791	509.668	182.630	384.739	2.107

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	233.31	-0.08	233.31	0.21	0.40	376.50
MEAN	15.91	0.00	-0.02	233.31	-0.08	233.31	0.21	0.37	
HUB	13.07	0.00	-0.02	233.31	-0.08	233.31	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.96	47.36	10.60	372.65	439.73	5.84	503.74	479.79	1.41
MEAN	54.22	44.80	9.42	323.69	399.08	5.84	503.74	479.79	1.41
HUB	48.74	38.84	9.90	265.86	353.78	5.84	503.74	479.79	1.41

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	310.94	190.26	245.93	1101.22	0.28	2.05	1.78	7.43
MEAN	15.50	310.34	186.86	247.78	1099.43	0.28	2.13	1.86	5.75
HUB	12.59	326.84	210.83	249.76	1097.66	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	364.92	301.65	174.66	0.27	3414.72	0.92	0.91		
MEAN	315.24	279.07	128.38	0.25	2897.13	0.92	0.91	0.91	1.58
HUB	256.10	253.83	45.27	0.23	2655.35	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.47	1.07	6.13	519.28	1.02	511.51	485.57	1.15
MEAN	6.40	1.06	6.06	517.59	1.02	509.85	484.73	1.21
HUB	6.37	1.06	6.00	516.80	1.02	508.21	484.35	1.28

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.73	35.38	31.50	3.88	0.93	0.47	1.40
MEAN	37.02	27.39	23.50	3.89	0.94	0.44	1.64
HUB	40.17	10.27	6.50	3.77	0.94	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	340.1484	190.2841	281.9449	1098.0608	0.3098	-0.1746	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.4087	6.0014	508.5917	484.8971	1.2682	34.0153	33.0000	-1.0153

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   288.4118    65.8591   280.7916  1100.8773     0.2620     0.1412     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.4071     6.1124   511.2049   484.8521   410.5396     0.0245     0.3775

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   280.5623     0.0000   280.5623  1101.2577     0.2548     0.3004     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.1237   511.5636   484.8502     0.0000     0.0600     0.0370     0.1734

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8799     6.4027     1.0627   517.8888     9.7722   233.6680     1.8114

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  60811.801       0.457      88.776  265910.156   0.232265E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1469   Tt4 =   517.8888   T1  =   451.5591

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    412605.41    602.3381     84.3755      1.5247      0.8404     15.2617      1.1469     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 37357 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.307   EfDer =  0.956    SH =  0.665101E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     26.424    2302.428       4.337     449.670       1.000       1.000       0.980
  W Kg/sec =  12.011  Wdry =  26.423  WH2O = 0.002  lbm/sec   H2O =   0.027g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.388    2472.829       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  61819.016   20733.348       3.407     831.557     244.090     619.754       2.539

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   178.42    -0.06   178.42     0.17     0.44   445.17
 MEAN    17.06     0.00    -0.02   178.42    -0.06   178.42     0.17     0.38
 HUB     12.51     0.00    -0.02   178.42    -0.06   178.42     0.17     0.30

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.71    50.47    16.24   414.51   451.33     4.25   447.11   442.74     3.80
 MEAN    62.51    47.20    15.31   342.78   386.49     4.25   447.11   442.74     3.80
 HUB     54.64    38.62    16.02   251.36   308.29     4.25   447.11   442.74     3.80

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   372.18   284.77   239.64  1041.57      0.36     7.29     6.52    16.04
 MEAN    18.04   376.94   288.53   242.55  1038.77      0.36     7.43     6.80    12.53
 HUB     15.00   408.49   325.66   246.59  1035.32      0.39     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    414.51   272.51   129.74     0.26  5876.03      0.92     0.87
 MEAN   362.39   253.55    73.86     0.24  5205.00      0.92     0.87     0.87     1.75
 HUB    301.39   247.78    24.28     0.24  4885.70      0.92     0.87

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP       4.95     1.14     4.53   468.66     1.04   457.52   456.61     2.90
 MEAN      4.87     1.12     4.45   466.49     1.04   455.06   455.14     3.20
 HUB       4.84     1.12     4.35   465.46     1.04   452.04   454.46     3.62

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      49.92    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN     49.95    16.94    12.70     4.24     0.95     0.52     2.22
 HUB      52.87    -5.62    -9.30     3.68     0.95     0.39     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.956       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   388.0404   287.9706   260.0928  1038.4220     0.3737    -0.0369     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8819     4.4386   454.7609   455.4124     3.3040    47.9119    35.4000   -12.5119

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   258.8680    63.3270   251.0027  1046.0629     0.2475     0.5097     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8715     4.6709   461.4811   455.3045   554.9116     0.0336     0.6011

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   257.7307     0.0000   257.7307  1046.1064     0.2464     0.4800     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.6514   461.5280   455.2896     0.0000     0.0600     0.0840     0.4653
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8182     4.8494     1.1181   466.8698    17.2010   168.8117     1.3086

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 106953.977       0.622     159.711  280612.125   0.878088E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.724   EfDer =  0.961    SH =  0.111474E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.424    2302.428       4.849     466.870       1.000       1.000       0.980
 W Kg/sec =  12.011  Wdry =  26.421  WH2O = 0.003  lbm/sec   H2O =   0.049g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     75.993    2426.868       1.381       0.248      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57997.063   20732.984       2.654     590.487     222.452     468.502       2.106

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   235.73    -0.08   235.73     0.23     0.45   435.20
 MEAN    18.08     0.00    -0.02   235.73    -0.08   235.73     0.23     0.41
 HUB     15.21     0.00    -0.02   235.73    -0.08   235.73     0.23     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.28    46.36    13.92   412.90   475.52     4.68   462.40   455.37     3.36
 MEAN    57.02    42.30    14.72   363.24   433.09     4.68   462.40   455.37     3.36
 HUB     52.36    37.84    14.52   305.61   386.02     4.68   462.40   455.37     3.36

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   342.73   235.41   249.09  1058.98      0.32     2.33     2.04     9.02
 MEAN    18.01   342.77   233.01   251.40  1056.77      0.32     2.40     2.13     7.35
 HUB     15.22   363.69   260.33   253.97  1054.58      0.34     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    410.29   304.35   174.88     0.29  4808.80      0.92     0.88
 MEAN   361.86   282.50   128.86     0.27  4197.89      0.92     0.88     0.88     1.69
 HUB    305.87   258.02    45.54     0.24  3964.20      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.38     1.11     5.01   482.41     1.03   472.96   465.58     2.32
 MEAN     5.31     1.10     4.94   480.43     1.03   470.99   464.35     2.50
 HUB      5.29     1.09     4.87   479.68     1.03   469.04   463.90     2.69

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.38    35.07    31.50     3.57     0.93     0.54     1.40
 MEAN    42.83    27.14    23.50     3.64     0.95     0.51     1.63
 HUB     45.71    10.17     6.50     3.67     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.961       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   366.9165   233.6599   282.8972  1055.6681     0.3476    -0.1094     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3239     4.9023   470.0153   464.6252     2.6085    39.5551    30.6000    -8.9551

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   274.2624    58.1456   268.0279  1061.0175     0.2585     0.3566     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3188     5.0804   474.7919   464.5394   491.5697     0.0233     0.4539

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   284.1760     0.0000   284.1760  1060.5122     0.2680     0.3474     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0488	474.3465	464.5293	0.0000	0.0600	0.0626	0.2744

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8364	5.3037	1.0937	480.8395	13.9707	191.0842	1.4813

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
86887.242	0.516	129.746	255151.453	0.120800E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.611 EfDer = 0.976 SH = 0.133569E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.424	2302.428	5.304	480.839	1.000	1.000	0.980

W Kg/sec = 12.011 Wdry = 26.421 WH2O = 0.004 lbm/sec H2O = 0.062g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.516	2391.355	1.381	0.248	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54629.992	20732.803	2.643	545.479	206.424	424.468	2.056

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	240.36	-0.08	240.36	0.23	0.44	418.82
MEAN	17.74	0.00	-0.02	240.36	-0.08	240.36	0.23	0.40	
HUB	15.05	0.00	-0.02	240.36	-0.08	240.36	0.23	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.21	46.36	12.85	403.26	469.53	5.12	476.19	464.54	2.37
MEAN	56.01	43.40	12.61	356.41	429.95	5.12	476.19	464.54	2.37
HUB	51.53	38.84	12.69	302.39	386.35	5.12	476.19	464.54	2.37

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	335.48	219.31	253.87	1073.27	0.31	2.26	1.98	8.75
MEAN	17.51	337.53	220.08	255.91	1071.39	0.32	2.34	2.07	6.78
HUB	14.85	360.45	251.56	258.15	1069.55	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	398.03	310.47	178.72	0.29	4346.22	0.92	0.89		
MEAN	351.75	287.79	131.67	0.27	3854.39	0.92	0.89	0.89	1.64
HUB	298.37	262.36	46.81	0.25	3736.91	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.82	1.10	5.45	494.88	1.03	485.83	473.03	1.74
MEAN	5.76	1.09	5.38	493.29	1.03	484.13	472.12	1.85
HUB	5.75	1.08	5.32	492.91	1.03	482.47	471.93	1.96

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.82	35.14	31.50	3.64	0.93	0.50	1.40
MEAN	40.70	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.26	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	362.9561	221.5288	287.5102	1070.2434	0.3391	-0.1180	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7733	5.3370	483.1040	472.3756	1.9292	37.6145	31.5000	-6.1145

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	283.4440	61.8314	276.6177	1074.8092	0.2637	0.3009	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7702	5.5013	487.2357	472.3054	451.3937	0.0179	0.4256

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	288.1640	0.0000	288.1640	1074.5627	0.2682	0.3293	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4807	487.0186	472.2952	0.0000	0.0600	0.0491	0.2487

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8579	5.7578	1.0856	493.6940	12.8556	197.3700	1.5300

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
79964.617	0.505	119.409	253982.953	0.144566E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.904 EfDer = 0.987 SH = 0.160491E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.424	2302.428	5.758	493.694	1.000	1.000	0.980

W Kg/sec = 12.011 Wdry = 26.420 WH2O = 0.004 lbm/sec H2O = 0.079g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.816	2360.017	1.381	0.248	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51644.375	20732.584	2.664	513.330	192.672	395.845	2.055

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	241.46	-0.08	241.46	0.22	0.42	396.65
MEAN	16.97	0.00	-0.02	241.46	-0.08	241.46	0.22	0.39	
HUB	14.32	0.00	-0.02	241.46	-0.08	241.46	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.04	46.36	11.68	386.98	456.20	5.56	489.01	472.31	1.81
MEAN	54.70	43.80	10.90	340.98	417.88	5.56	489.01	472.31	1.81
HUB	50.01	37.84	12.17	287.72	375.68	5.56	489.01	472.31	1.81

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	323.49	200.10	254.18	1086.05	0.30	2.16	1.89	8.34
MEAN	16.57	325.57	201.13	256.01	1084.36	0.30	2.24	1.97	6.35
HUB	13.89	347.22	232.36	258.01	1082.70	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	379.35	311.02	179.25	0.29	3779.49	0.92	0.90		
MEAN	333.01	287.98	131.88	0.27	3334.88	0.92	0.90	0.90	1.59
HUB	279.08	262.21	46.73	0.24	3228.62	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.24	1.08	5.87	505.90	1.02	497.49	479.19	1.41
MEAN	6.18	1.07	5.81	504.47	1.02	495.95	478.42	1.49
HUB	6.17	1.07	5.75	504.12	1.02	494.43	478.25	1.56

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.21	35.19	31.50	3.69	0.93	0.47	1.40
MEAN	38.15	27.26	23.50	3.76	0.94	0.46	1.62
HUB	42.01	10.27	6.50	3.77	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.987	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	345.9732	202.2588	280.6935	1083.5450	0.3193	-0.0939	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.1905	5.7735	495.2090	478.6328	1.5313	35.7753	32.4000	-3.3753

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	282.3085	63.3135	275.1172	1087.0552	0.2597	0.2600	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.1890	5.9091	498.4240	478.5815	432.2457	0.0139	0.4014

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	280.0247	0.0000	280.0247	1087.1613	0.2576	0.3123	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.9037	498.5269	478.5703	0.0000	0.0600	0.0405	0.2461

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8716	6.1787	1.0731	504.8295	11.1364	213.6872	1.6565

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
69283.414	0.481	103.459	260252.953	0.173933E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.343 EfDer = 0.994 SH = 0.194232E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.424	2302.428	6.179	504.829	1.000	1.000	0.980

W Kg/sec = 12.011 Wdry = 26.419 WH2O = 0.005 lbm/sec H2O = 0.101g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.021	2333.844	1.381	0.249	53.355	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49084.703	20732.309	2.807	509.668	181.567	384.739	2.119

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	231.14	-0.08	231.14	0.21	0.40	373.11
MEAN	15.91	0.00	-0.02	231.14	-0.08	231.14	0.21	0.36	
HUB	13.07	0.00	-0.02	231.14	-0.08	231.14	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.88	47.36	10.52	368.09	434.71	5.99	500.54	478.59	1.49
MEAN	54.14	44.80	9.34	319.73	394.59	5.99	500.54	478.59	1.49
HUB	48.66	38.84	9.82	262.61	349.90	5.99	500.54	478.59	1.49

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	307.46	187.31	243.81	1097.53	0.28	2.05	1.78	7.43
MEAN	15.50	306.97	184.15	245.60	1095.79	0.28	2.13	1.86	5.75
HUB	12.59	323.35	208.07	247.52	1094.07	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	360.46	299.04	173.15	0.27	3361.87	0.92	0.91		
MEAN	311.39	276.60	127.24	0.25	2855.09	0.92	0.91	0.91	1.58
HUB	252.96	251.55	44.90	0.23	2620.61	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.63	1.07	6.28	515.69	1.02	508.09	484.38	1.22
MEAN	6.56	1.06	6.22	514.05	1.02	506.48	483.54	1.28
HUB	6.53	1.06	6.15	513.29	1.02	504.89	483.16	1.35

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.53	35.38	31.50	3.88	0.93	0.46	1.40
MEAN	36.86	27.39	23.50	3.89	0.93	0.44	1.64
HUB	40.05	10.28	6.50	3.78	0.93	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	336.5258	187.5228	279.4365	1094.4412	0.3075	-0.1753	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.5643	6.1530	505.2418	483.7037	1.3395	33.8646	33.0000	-0.8646

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   285.9379    65.2942   278.3831  1097.1777     0.2606     0.1376     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.5628     6.2640   507.7722   483.6619   410.5396     0.0243     0.3750

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   278.1609     0.0000   278.1609  1097.5529     0.2534     0.2977     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.2755   508.1246   483.6597     0.0000     0.0600     0.0369     0.1699

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8801     6.5583     1.0614   514.3423     9.5136   234.4091     1.8171

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  59199.301       0.456      88.400  273243.094   0.210822E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1438   Tt4 =   514.3423   T1  =   449.6699

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    402288.56    600.7241     83.3883      1.5121      0.8405     15.3070      1.1438     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 34281 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.370   EfDer =  0.955    SH =  0.622437E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     28.397    2235.809       4.829     451.604       1.000       1.000       0.980
  W Kg/sec =  12.908  Wdry =  28.396  WH2O = 0.002  lbm/sec   H2O =   0.028g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.666    2396.135       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59869.883   22281.535       3.522     831.557     236.124     619.754       2.625

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   172.79    -0.06   172.79     0.17     0.42   431.37
 MEAN    17.06     0.00    -0.02   172.79    -0.06   172.79     0.17     0.36
 HUB     12.51     0.00    -0.02   172.79    -0.06   172.79     0.17     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.77    50.47    16.30   402.51   438.09     4.74   449.20   444.71     3.57
 MEAN    62.57    47.20    15.37   332.86   375.09     4.74   449.20   444.71     3.57
 HUB     54.71    38.62    16.09   244.08   299.10     4.74   449.20   444.71     3.57

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   361.46   276.58   232.72  1043.25      0.35     7.29     6.52    16.04
 MEAN    18.04   365.96   280.23   235.36  1040.62      0.35     7.43     6.80    12.53
 HUB     15.00   396.39   316.22   239.03  1037.38      0.38     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    402.51   264.61   125.94     0.25  5707.05      0.92     0.87
 MEAN   351.90   246.03    71.67     0.24  5055.27      0.92     0.87     0.87     1.75
 HUB    292.67   240.18    23.55     0.23  4744.06      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.46     1.13     5.03   469.51     1.04   459.01   457.90     2.82
 MEAN     5.39     1.12     4.95   467.47     1.04   456.70   456.49     3.10
 HUB      5.35     1.11     4.85   466.49     1.03   453.85   455.84     3.48

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.92    28.42    24.20     4.22     0.93     0.57     1.80
 MEAN    49.97    16.94    12.70     4.24     0.95     0.52     2.22
 HUB     52.92    -5.63    -9.30     3.67     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.955       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   376.6928   279.6867   252.3347  1040.2899     0.3621    -0.0369     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3963     4.9346   456.4131   456.7514     3.1935    47.9431    35.4000   -12.5431

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   251.7043    61.5745   244.0566  1047.4597     0.2403     0.5096     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3859     5.1765   462.7291   456.6577   554.9116     0.0327     0.6003

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   250.5590     0.0000   250.5590  1047.5027     0.2392     0.4788     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.1557   462.7750   456.6436     0.0000     0.0600     0.0842     0.4642
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8175     5.3623     1.1105   467.8232    16.2204   168.5730     1.3068

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 100864.617       0.623     161.864  300278.688   0.826318E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.686   EfDer =  0.961    SH =  0.104791E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     28.397    2235.809       5.362     467.823       1.000       1.000       0.980
 W Kg/sec =  12.908  Wdry =  28.395  WH2O = 0.003  lbm/sec   H2O =   0.051g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.931    2354.247       1.381       0.248      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  56399.977   22281.164       2.728     590.487     216.416     468.502       2.165

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   229.23    -0.08   229.23     0.22     0.44   422.18
 MEAN    18.08     0.00    -0.02   229.23    -0.08   229.23     0.22     0.40
 HUB     15.21     0.00    -0.02   229.23    -0.08   229.23     0.22     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.25    46.36    13.89   400.95   461.93      5.19   463.60   456.72     3.31
 MEAN    56.99    42.30    14.69   352.73   420.74      5.19   463.60   456.72     3.31
 HUB     52.32    37.84    14.48   296.76   375.05      5.19   463.60   456.72     3.31

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   333.12   227.94   242.92  1059.58      0.31     2.33     2.04     9.02
 MEAN    18.01   333.23   225.84   245.03  1057.51      0.32     2.40     2.13     7.35
 HUB     15.22   353.63   252.71   247.37  1055.47      0.34     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    398.42   296.78   170.48     0.28  4656.09      0.92     0.88
 MEAN   351.39   275.33   125.56     0.26  4068.76      0.92     0.88     0.88     1.68
 HUB    297.02   251.31    44.31     0.24  3848.15      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.92     1.10     5.53   482.43     1.03   473.51   466.48     2.35
 MEAN     5.84     1.09     5.46   480.59     1.03   471.66   465.31     2.52
 HUB      5.82     1.08     5.39   479.90     1.03   469.84   464.88     2.70

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.18    35.06    31.50     3.56     0.93     0.53     1.40
 MEAN    42.67    27.13    23.50     3.63     0.95     0.51     1.63
 HUB     45.61    10.16     6.50     3.66     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.961       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   356.7401   226.4719   275.6338  1056.4667     0.3377    -0.1099     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8543     5.4156   470.7403   465.5692     2.6222    39.4079    30.6000    -8.8079

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   267.6486    56.7434   261.5644  1061.4722     0.2521     0.3532     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8494     5.5996   475.2127   465.4938   491.5697     0.0223     0.4505

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   277.2452     0.0000   277.2452  1060.9952     0.2613     0.3442     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5666	474.7921	465.4843	0.0000	0.0600	0.0618	0.2707

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8369	5.8336	1.0879	480.9718	13.1495	191.4799	1.4843

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
81784.617	0.515	131.245	273388.469	0.113468E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.473 EfDer = 0.977 SH = 0.125257E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
28.397	2235.809	5.834	480.972	1.000	1.000	0.980

W Kg/sec = 12.908 Wdry = 28.394 WH2O = 0.004 lbm/sec H2O = 0.064g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.907	2321.844	1.381	0.248	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53325.566	22280.986	2.704	545.479	201.714	424.468	2.104

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	234.62	-0.08	234.62	0.22	0.43	406.64
MEAN	17.74	0.00	-0.02	234.62	-0.08	234.62	0.22	0.39	
HUB	15.05	0.00	-0.02	234.62	-0.08	234.62	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.08	46.36	12.72	391.59	456.57	5.64	476.55	465.50	2.42
MEAN	55.87	43.40	12.47	346.10	418.19	5.64	476.55	465.50	2.42
HUB	51.38	38.84	12.54	293.64	375.93	5.64	476.55	465.50	2.42

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	326.41	211.68	248.46	1072.96	0.30	2.26	1.98	8.75
MEAN	17.51	328.57	212.85	250.31	1071.22	0.31	2.34	2.07	6.78
HUB	14.85	351.07	244.05	252.37	1069.50	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	386.52	303.80	174.83	0.28	4195.06	0.92	0.89		
MEAN	341.57	281.47	128.72	0.26	3727.69	0.92	0.89	0.89	1.63
HUB	289.74	256.47	45.69	0.24	3625.39	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.37	1.09	5.98	494.13	1.03	485.57	473.64	1.81
MEAN	6.31	1.08	5.91	492.67	1.02	483.99	472.77	1.92
HUB	6.29	1.08	5.85	492.34	1.02	482.44	472.60	2.02

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.43	35.13	31.50	3.63	0.93	0.50	1.40
MEAN	40.38	27.21	23.50	3.71	0.94	0.48	1.62
HUB	44.04	10.26	6.50	3.76	0.94	0.48	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.977	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	353.4726	214.2460	281.1433	1070.1177	0.3303	-0.1191	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3182	5.8642	483.0032	473.0177	1.9948	37.3093	31.5000	-5.8093

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	277.5619	60.5482	270.8773	1074.3740	0.2583	0.2940	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3154	6.0326	486.8539	472.9557	451.3937	0.0170	0.4198

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	282.1314	0.0000	282.1314	1074.1401	0.2627	0.3240	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.0113	486.6481	472.9465	0.0000	0.0600	0.0480	0.2420

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8592	6.3026	1.0804	493.0466	12.0757	198.4488	1.5384

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
75117.750	0.503	120.547	272558.531	0.135340E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.669 EfDer = 0.988 SH = 0.149797E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
28.397	2235.809	6.303	493.046	1.000	1.000	0.980

W Kg/sec = 12.908 Wdry = 28.393 WH2O = 0.004 lbm/sec H2O = 0.081g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
64.574	2293.237	1.381	0.249	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50586.242	22280.771	2.716	513.330	189.036	395.845	2.094

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	236.51	-0.08	236.51	0.22	0.41	385.42
MEAN	16.97	0.00	-0.02	236.51	-0.08	236.51	0.22	0.38	
HUB	14.32	0.00	-0.02	236.51	-0.08	236.51	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.82	46.36	11.46	375.78	444.08	6.10	488.55	472.96	1.88
MEAN	54.47	43.80	10.67	331.12	406.98	6.10	488.55	472.96	1.88
HUB	49.76	37.84	11.92	279.40	366.12	6.10	488.55	472.96	1.88

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	315.13	192.43	249.55	1084.91	0.29	2.16	1.89	8.34
MEAN	16.57	317.41	194.00	251.22	1083.35	0.29	2.24	1.97	6.35
HUB	13.89	338.75	225.21	253.05	1081.82	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	368.37	305.34	175.94	0.28	3634.64	0.92	0.90		
MEAN	323.37	282.58	129.37	0.26	3216.71	0.92	0.90	0.90	1.58
HUB	271.01	257.16	45.80	0.24	3129.33	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.79	1.08	6.41	504.45	1.02	496.46	479.56	1.50
MEAN	6.74	1.07	6.35	503.14	1.02	495.04	478.84	1.57
HUB	6.72	1.07	6.29	502.86	1.02	493.64	478.70	1.64

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.64	35.18	31.50	3.68	0.93	0.47	1.40
MEAN	37.68	27.25	23.50	3.75	0.94	0.45	1.62
HUB	41.67	10.26	6.50	3.76	0.94	0.45	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.988	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	337.4939	195.0909	275.3936	1082.5662	0.3118	-0.0953	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7468	6.3127	494.3263	479.0433	1.6163	35.3140	32.4000	-2.9140

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	277.3079	62.1921	270.2440	1085.8164	0.2554	0.2500	2.2705

```
   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.7455     6.4502   497.3003   478.9981   432.2457     0.0132     0.3935

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   275.0416     0.0000   275.0416  1085.9203     0.2533     0.3044     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.4449   497.4007   478.9879     0.0000     0.0600     0.0395     0.2367

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8730     6.7350     1.0686   503.4807    10.4349   215.6312     1.6716

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  64921.660       0.478     104.184  279682.688   0.161884E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.023   EfDer =  0.995    SH =  0.179978E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     28.397    2235.809       6.735     503.480       1.000       1.000       0.980
 W Kg/sec =  12.908  Wdry =  28.392  WH2O = 0.005  lbm/sec   H2O =   0.102g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     61.065    2269.350       1.381       0.249      53.354      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  48228.703   22280.506       2.851     509.668     178.769     384.739       2.152

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   227.11    -0.08   227.11     0.21     0.39   362.80
 MEAN    15.91     0.00    -0.02   227.11    -0.08   227.11     0.21     0.35
 HUB     13.07     0.00    -0.02   227.11    -0.08   227.11     0.21     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.58    47.36    10.22   357.44   423.56     6.54   499.34   479.01     1.58
 MEAN    53.82    44.80     9.02   310.48   384.74     6.54   499.34   479.01     1.58
 HUB     48.32    38.84     9.48   255.01   341.54     6.54   499.34   479.01     1.58

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   299.78   179.56   240.06  1095.65      0.27     2.05     1.78     7.43
 MEAN    15.50   299.68   177.17   241.70  1094.04      0.27     2.13     1.86     5.75
 HUB     12.59   315.99   201.46   243.45  1092.46      0.29     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    350.03   294.43   170.47     0.27  3222.73      0.92     0.91
 MEAN   302.38   272.20   125.20     0.25  2747.01      0.92     0.91     0.91     1.56
 HUB    245.64   247.43    44.19     0.23  2537.34      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.19     1.07     6.83   513.59     1.02   506.36   484.56     1.31
 MEAN     7.12     1.06     6.77   512.10     1.02   504.88   483.77     1.37
 HUB      7.09     1.05     6.70   511.44     1.02   503.41   483.43     1.44

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     36.80    35.38    31.50     3.88     0.93     0.45     1.40
 MEAN    36.24    27.38    23.50     3.88     0.93     0.43     1.64
 HUB     39.61    10.29     6.50     3.79     0.93     0.42     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.995       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   328.8411   180.4221   274.9260  1092.7406     0.3009    -0.1778     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.1287     6.7002   503.6830   483.9289     1.4316    33.2752    33.0000    -0.2752
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   281.6100    64.3059   274.1696  1095.2505     0.2571     0.1237     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     7.1274     6.8112   506.0000   483.8923   410.5396     0.0236     0.3654

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   273.9629     0.0000   273.9629  1095.6149     0.2501     0.2874     0.5109

Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     6.8233   506.3412   483.8897     0.0000     0.0600     0.0366     0.1562

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.8808     7.1225     1.0575   512.3726     8.8927   237.3464     1.8399

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  55336.320       0.452      88.802  294018.906   0.194678E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1346   Tt4 =   512.3726   T1  =   451.6038

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    378024.97    606.6426     80.6660      1.4750      0.8415     15.3697     1.1346     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 30029 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =13.856   EfDer =  0.967    SH =  0.105864E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     32.551    2121.947       5.592     461.413       1.000       1.000       0.980
 W Kg/sec =  14.796  Wdry =  32.547  WH2O = 0.003  lbm/sec   H2O =   0.055g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.699    2249.811       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60544.008   25539.906       3.520     831.557     236.232     619.754       2.623

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   174.74    -0.06   174.74     0.17     0.40   405.02
 MEAN    17.06     0.00    -0.02   174.74    -0.06   174.74     0.17     0.35
 HUB     12.51     0.00    -0.02   174.74    -0.06   174.74     0.17     0.28

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.42    50.47    14.95   382.02   420.14      5.49   458.96   452.73     4.39
 MEAN    61.06    47.20    13.86   315.91   361.07      5.49   458.96   452.73     4.39
 HUB     52.98    38.62    14.36   231.65   290.22      5.49   458.96   452.73     4.39

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   347.45   254.44   236.60  1052.64      0.33     7.29     6.52    16.04
 MEAN    18.04   354.30   261.62   238.91  1050.43      0.34     7.43     6.80    12.53
 HUB     15.00   387.08   301.93   242.22  1047.58      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    382.02   268.80   127.57     0.26  5250.41      0.92     0.89
 MEAN   333.98   249.63    72.36     0.24  4719.67      0.92     0.89     0.89     1.65
 HUB    277.76   243.43    24.16     0.23  4529.66      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.22     1.11     5.78   477.05     1.03   467.34   463.84     3.56
 MEAN     6.16     1.10     5.70   475.47     1.03   465.37   462.80     3.84
 HUB      6.13     1.10     5.59   474.90     1.03   462.85   462.46     4.23

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     47.08    28.33    24.20     4.13     0.93     0.53     1.80
 MEAN    47.60    16.85    12.70     4.15     0.94     0.48     2.22
 HUB     51.26    -5.70    -9.30     3.60     0.94     0.35     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.967       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   365.7941   261.1154   256.1720  1050.0518     0.3484    -0.0424     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.1675     5.6771   465.0465   463.0402     3.9452    45.5475    35.4000   -10.1475

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   256.7500    62.8089   248.9490  1056.1917     0.2431     0.4681     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.1598     5.9148   470.5041   462.9311   554.9116     0.0259     0.5572

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   255.3171     0.0000   255.3171  1056.2488     0.2417     0.4491     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.8973   470.5628   462.9217     0.0000     0.0600     0.0693     0.4320
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8357     6.1388     1.0977   475.8033    14.3915   175.9555     1.3640

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  89514.609       0.613     164.660  338607.281   0.129406E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =12.803   EfDer =  0.975    SH =  0.153443E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     32.551    2121.947       6.139     475.803       1.000       1.000       0.980
 W Kg/sec =  14.796  Wdry =  32.546  WH2O = 0.005  lbm/sec   H2O =   0.084g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     74.654    2215.537       1.381       0.248      53.353      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57465.125   25539.428       2.702     590.487     218.541     468.502       2.144

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   233.56    -0.08   233.56     0.22     0.42   397.31
 MEAN    18.08     0.00    -0.02   233.56    -0.08   233.56     0.22     0.39
 HUB     15.21     0.00    -0.02   233.56    -0.08   233.56     0.22     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.46    46.36    12.10   380.53   446.56     5.94   471.42   463.00     3.90
 MEAN    55.10    42.30    12.80   334.76   408.26     5.94   471.42   463.00     3.90
 HUB     50.34    37.84    12.50   281.65   365.96     5.94   471.42   463.00     3.90

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950       77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   321.65   203.76   248.87  1066.65      0.30     2.33     2.04     9.02
 MEAN    18.01   324.00   205.30   250.66  1064.98      0.30     2.40     2.13     7.35
 HUB     15.22   346.28   236.82   252.64  1063.33      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    378.13   303.88   174.36     0.28  4162.51      0.92     0.89
 MEAN   333.50   281.54   128.20     0.26  3698.93      0.92     0.89     0.89     1.59
 HUB    281.89   256.63    45.08     0.24  3606.28      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.67     1.09     6.27   488.19     1.03   479.88   471.07     2.93
 MEAN     6.61     1.08     6.20   486.81     1.02   478.38   470.22     3.10
 HUB      6.60     1.07     6.14   486.54     1.02   476.90   470.07     3.26

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.31    35.02    31.50     3.52     0.93     0.48     1.40
 MEAN    39.32    27.09    23.50     3.59     0.94     0.46     1.63
 HUB     43.15    10.12     6.50     3.62     0.94     0.46     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.975       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   349.1836   205.8782   282.0343  1063.8610     0.3282    -0.1235     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6227     6.1525   477.3821   470.4727     3.2218    36.1285    30.6000    -5.5285

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   274.9577    58.2930   268.7074  1068.0015     0.2575     0.2882     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6199     6.3256   481.1057   470.3932   491.5697     0.0165     0.3964

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   284.6159     0.0000   284.6159  1067.5126     0.2666     0.2980     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.2927	480.6712	470.3924	0.0000	0.0600	0.0469	0.2104

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8569	6.6071	1.0763	487.1822	11.3797	204.4007	1.5845

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
70796.102	0.495	130.228	309542.188	0.162714E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =10.367 EfDer = 0.990 SH = 0.174966E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
32.551	2121.947	6.607	487.182	1.000	1.000	0.980

W Kg/sec = 14.796 Wdry = 32.545 WH2O = 0.006 lbm/sec H2O = 0.100g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.187	2189.510	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54720.441	25539.213	2.655	545.479	205.471	424.468	2.066

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	240.76	-0.08	240.76	0.23	0.41	383.47
MEAN	17.74	0.00	-0.02	240.76	-0.08	240.76	0.23	0.38	
HUB	15.05	0.00	-0.02	240.76	-0.08	240.76	0.23	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.07	46.36	10.71	371.65	442.89	6.38	482.52	470.40	2.96
MEAN	53.77	43.40	10.37	328.47	407.32	6.38	482.52	470.40	2.96
HUB	49.18	38.84	10.34	278.69	368.35	6.38	482.52	470.40	2.96

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	317.06	186.52	256.39	1077.93	0.29	2.26	1.98	8.75
MEAN	17.51	321.29	191.58	257.92	1076.58	0.30	2.34	2.07	6.78
HUB	14.85	345.50	227.97	259.61	1075.25	0.32	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	366.83	313.45	180.32	0.29	3696.54	0.92	0.91		
MEAN	324.18	290.00	132.59	0.27	3355.44	0.92	0.91	0.91	1.53
HUB	274.98	263.83	47.01	0.25	3386.63	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.11	1.08	6.70	498.18	1.02	490.11	477.12	2.33
MEAN	7.06	1.07	6.64	497.17	1.02	488.87	476.53	2.43
HUB	7.07	1.07	6.59	497.26	1.02	487.67	476.62	2.53

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.03	35.12	31.50	3.62	0.93	0.44	1.40
MEAN	36.61	27.21	23.50	3.71	0.94	0.43	1.62
HUB	41.29	10.26	6.50	3.76	0.94	0.44	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.990	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	348.0866	192.8407	289.7875	1075.3876	0.3237	-0.1338	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.0754	6.5863	487.8011	476.7783	2.5343	33.6420	31.5000	-2.1420

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	287.2176	62.6546	280.3004	1078.8075	0.2662	0.2171	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.0740	6.7383	490.9089	476.7151	451.3937	0.0132	0.3609

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	291.8179	0.0000	291.8179	1078.5664	0.2706	0.2679	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7173	490.6947	476.7115	0.0000	0.0600	0.0382	0.1691

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8744	7.0632	1.0690	497.5384	10.3569	214.0340	1.6592

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
64442.547	0.479	118.540	309720.750	0.185165E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.327 EfDer = 0.998 SH = 0.199396E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
32.551	2121.947	7.063	497.538	1.000	1.000	0.980

W Kg/sec = 14.796 Wdry = 32.544 WH2O = 0.006 lbm/sec H2O = 0.120g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
66.349	2166.603	1.381	0.249	53.355	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52288.617	25538.971	2.643	513.330	194.241	395.845	2.038

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	244.47	-0.08	244.47	0.23	0.40	364.14
MEAN	16.97	0.00	-0.02	244.47	-0.08	244.47	0.23	0.37	
HUB	14.32	0.00	-0.02	244.47	-0.08	244.47	0.23	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.58	46.36	9.22	356.65	432.46	6.82	492.74	476.72	2.37
MEAN	52.13	43.80	8.33	314.25	398.21	6.82	492.74	476.72	2.37
HUB	47.34	37.84	9.50	265.17	360.73	6.82	492.74	476.72	2.37

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	308.30	166.63	259.39	1087.94	0.28	2.16	1.89	8.34
MEAN	16.57	312.63	172.52	260.72	1086.77	0.29	2.24	1.97	6.35
HUB	13.89	335.68	209.62	262.19	1085.63	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	349.61	317.44	182.98	0.29	3147.64	0.92	0.91		
MEAN	306.91	293.32	134.39	0.27	2860.73	0.92	0.91	0.91	1.48
HUB	257.21	266.47	47.59	0.25	2912.80	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.51	1.06	7.11	506.91	1.02	499.27	482.14	1.96
MEAN	7.47	1.06	7.06	506.05	1.02	498.20	481.67	2.03
HUB	7.48	1.06	7.01	506.21	1.02	497.15	481.78	2.10

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.72	35.20	31.50	3.70	0.93	0.40	1.40
MEAN	33.49	27.27	23.50	3.77	0.93	0.40	1.62
HUB	38.64	10.29	6.50	3.79	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.998	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	334.4377	173.4889	285.9199	1085.8965	0.3080	-0.1080	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.4835	7.0132	497.4004	481.8763	2.0903	31.2483	32.4000	1.1517

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	288.9704	64.8076	281.6094	1088.3793	0.2655	0.1649	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4825     7.1293   499.6779   481.8319   432.2457     0.0122     0.3302

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   286.5527     0.0000   286.5527  1088.4962     0.2633     0.2377     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.1250   499.7896   481.8218     0.0000     0.0600     0.0371     0.1548

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8793     7.4719     1.0579   506.3875     8.8499   235.3848     1.8247

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  55074.441       0.451     101.308  318872.969   0.210913E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.468   EfDer =  1.000    SH =  0.227858E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     32.551    2121.947       7.472     506.387       1.000       1.000       0.980
 W Kg/sec =  14.796  Wdry =  32.543  WH2O = 0.007  lbm/sec   H2O =   0.142g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     63.275    2147.589       1.381       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50204.121   25538.684       2.751     509.668     185.247     384.739       2.077

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   236.41    -0.08   236.41     0.22     0.38   343.33
 MEAN    15.91     0.00    -0.02   236.41    -0.08   236.41     0.22     0.35
 HUB     13.07     0.00    -0.02   236.41    -0.08   236.41     0.22     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.13    47.36     7.77   339.24   413.56     7.23   501.90   481.83     2.00
 MEAN    51.27    44.80     6.47   294.67   377.84     7.23   501.90   481.83     2.00
 HUB     45.68    38.84     6.84   242.02   338.38     7.23   501.90   481.83     2.00

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   294.45   153.52   251.27  1096.98      0.27     2.05     1.78     7.43
 MEAN    15.50   296.81   155.89   252.58  1095.77      0.27     2.13     1.86     5.75
 HUB     12.59   315.30   186.83   253.99  1094.58      0.29     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    332.20   308.32   178.68     0.28  2755.66      0.92     0.91
 MEAN   286.98   284.57   131.09     0.26  2417.17      0.92     0.91     0.91     1.46
 HUB    233.14   258.18    46.31     0.24  2353.21      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.88     1.05     7.50   514.59     1.02   507.62   486.37     1.72
 MEAN     7.83     1.05     7.45   513.58     1.01   506.50   485.83     1.78
 HUB      7.82     1.05     7.39   513.39     1.01   505.40   485.75     1.84

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.42    35.42    31.50     3.92     0.93     0.39     1.40
 MEAN    31.68    27.43    23.50     3.93     0.93     0.37     1.64
 HUB     36.34    10.33     6.50     3.83     0.93     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   328.3842   158.7456   287.4648  1094.3440     0.3001    -0.1967     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.8357     7.3673   505.1881   486.0020     1.8584    28.9086    33.0000     4.0914
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   295.5398    67.4868   287.7314  1096.1260     0.2696     0.0176     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.8328     7.4519   506.8344   485.9665   410.5396     0.0272     0.2994

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   287.4886     0.0000   287.4886  1096.5300     0.2622     0.2115     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.4663   507.2115   485.9595     0.0000     0.0600     0.0423     0.0536

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8740     7.8268     1.0475   513.8516     7.4647   262.0222     2.0312

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  46461.359       0.421      85.465  336145.938   0.241208E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1136   Tt4 =   513.8516   T1  =   461.4126

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    326289.06    600.2006     80.6992      1.3995      0.8551     13.8564      1.1136     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 25666 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.032   EfDer =  0.995    SH =  0.174965E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     41.058    1951.430       6.513     472.323       1.000       1.000       0.980
 W Kg/sec =  18.663  Wdry =  41.051  WH2O = 0.007  lbm/sec   H2O =   0.103g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     88.429    2044.987       1.381       0.249      53.354      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  67321.938   32213.691       3.212     831.557     258.875     619.754       2.394

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   194.30    -0.07   194.30     0.18     0.38   368.15
 MEAN    17.06     0.00    -0.02   194.30    -0.07   194.30     0.18     0.33
 HUB     12.51     0.00    -0.02   194.30    -0.07   194.30     0.18     0.27

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     61.06    50.47    10.59   351.32   401.53     6.36   469.29   461.35     5.24
 MEAN    56.23    47.20     9.03   290.52   349.57     6.36   469.29   461.35     5.24
 HUB     47.64    38.62     9.02   213.04   288.39     6.36   469.29   461.35     5.24

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   337.80   208.44   265.83  1061.11      0.32     7.29     6.52    16.04
 MEAN    18.04   350.56   226.41   267.64  1059.66      0.33     7.43     6.80    12.53
 HUB     15.00   391.41   282.69   270.72  1057.41      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    351.32   301.79   142.88     0.28  4301.40      0.92     0.91
 MEAN   307.14   279.55    80.74     0.26  4084.64      0.92     0.91     0.91     1.41
 HUB    255.44   272.09    27.25     0.26  4241.21      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.07     1.08     6.59   484.10     1.02   474.93   469.46     4.60
 MEAN     7.04     1.08     6.53   483.50     1.02   473.63   469.10     4.82
 HUB      7.06     1.08     6.43   483.93     1.02   471.62   469.45     5.19

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.10    28.26    24.20     4.06     0.93     0.39     1.80
 MEAN    40.23    16.79    12.70     4.09     0.93     0.35     2.22
 HUB     46.24    -5.75    -9.30     3.55     0.93     0.23     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.995       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   365.4763   225.9682   287.2478  1059.0768     0.3451    -0.0600     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     7.0475     6.4971   473.1093   469.3484     4.9608    38.1909    35.4000    -2.7909

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   290.1436    70.9780   281.3280  1063.5076     0.2728     0.3321     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     7.0450     6.6945   477.0786   469.2401   554.9116     0.0145     0.4330

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   288.0212     0.0000   288.0212  1063.6101     0.2708     0.3449     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     6.6869   477.1772   469.2395     0.0000     0.0600     0.0393     0.3180
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8762     7.0318     1.0797   483.8439    11.5219   201.5529     1.5624

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  71690.344       0.581     166.337  420826.219   0.199548E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.187   EfDer =  1.000    SH =  0.222413E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     41.058    1951.430       7.032     483.844       1.000       1.000       0.980
 W Kg/sec =  18.663  Wdry =  41.049  WH2O = 0.009  lbm/sec   H2O =   0.136g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.898    2020.498       1.381       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64742.219   32213.090       2.433     590.487     242.690     468.502       1.930

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   263.14    -0.09   263.14     0.25     0.41   362.33
 MEAN    18.08     0.00    -0.02   263.14    -0.09   263.14     0.25     0.38
 HUB     15.21     0.00    -0.02   263.14    -0.09   263.14     0.25     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.07    46.36     6.71   349.95   437.92     6.74   478.28   469.29     4.76
 MEAN    49.49    42.30     7.19   307.86   405.07     6.74   478.28   469.29     4.76
 HUB     44.56    37.84     6.72   259.02   369.30     6.74   478.28   469.29     4.76

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   320.25   148.90   283.53  1071.10      0.30     2.33     2.04     9.02
 MEAN    18.01   326.93   160.87   284.60  1070.28      0.31     2.40     2.13     7.35
 HUB     15.22   353.48   207.94   285.85  1069.49      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    347.74   346.31   198.84     0.32  3042.41      0.92     0.91
 MEAN   306.70   319.79   145.83     0.30  2898.96      0.92     0.91     0.91     1.37
 HUB    259.24   290.41    51.30     0.27  3166.87      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.44     1.06     7.00   492.17     1.02   483.93   474.64     3.96
 MEAN     7.42     1.06     6.96   491.78     1.02   483.19   474.40     4.06
 HUB      7.46     1.06     6.92   492.51     1.02   482.47   474.90     4.16

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     27.71    35.04    31.50     3.54     0.93     0.33     1.40
 MEAN    29.48    27.13    23.50     3.63     0.93     0.33     1.63
 HUB     36.03    10.17     6.50     3.67     0.93     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   359.1811   161.3248   320.9134  1068.7213     0.3361    -0.1649     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.4357     6.8835   481.7865   474.6864     4.2781    26.6889    30.6000     3.9111

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   315.1645    66.8171   308.0002  1071.3644     0.2942     0.0923     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4332     7.0055   484.1714   474.6145   491.5697     0.0151     0.2523

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   326.4169     0.0000   326.4169  1070.7180     0.3049     0.1442     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9631	483.5913	474.6228	0.0000	0.0600	0.0418	0.0038

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8707	7.4204	1.0553	492.1526	8.3092	252.5300	1.9576

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
51710.891	0.428	119.980	387886.906	0.230998E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.274 EfDer = 0.994 SH = 0.242031E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
41.058	1951.430	7.420	492.153	1.000	1.000	0.980

W Kg/sec = 18.663 Wdry = 41.048 WH2O = 0.010 lbm/sec H2O = 0.153g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
79.228	2003.370	1.381	0.249	53.356	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62549.512	32212.842	2.352	545.479	231.950	424.468	1.830

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	275.21	-0.09	275.21	0.26	0.41	350.87
MEAN	17.74	0.00	-0.02	275.21	-0.09	275.21	0.26	0.38	
HUB	15.05	0.00	-0.02	275.21	-0.09	275.21	0.26	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.17	46.36	4.81	341.78	438.88	7.09	486.07	474.59	3.92
MEAN	47.67	43.40	4.27	302.08	408.71	7.09	486.07	474.59	3.92
HUB	42.97	38.84	4.13	256.29	376.13	7.09	486.07	474.59	3.92

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	323.25	127.76	296.93	1078.54	0.30	2.26	1.98	8.75
MEAN	17.51	330.75	144.37	297.57	1078.10	0.31	2.34	2.07	6.78
HUB	14.85	358.18	198.11	298.41	1077.67	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	337.35	363.45	209.60	0.34	2532.77	0.92	0.91		
MEAN	298.13	334.95	153.75	0.31	2529.19	0.92	0.91	0.91	1.31
HUB	252.89	303.39	54.78	0.28	2943.35	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.77	1.05	7.31	499.08	1.01	490.69	478.84	3.40
MEAN	7.77	1.05	7.29	499.07	1.01	490.28	478.85	3.45
HUB	7.83	1.06	7.26	500.21	1.02	489.90	479.56	3.49

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	23.28	35.22	31.50	3.72	0.93	0.28	1.40
MEAN	25.88	27.32	23.50	3.82	0.92	0.29	1.62
HUB	33.58	10.40	6.50	3.90	0.92	0.33	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	365.3618	145.3223	335.2173	1076.3790	0.3394	-0.1776	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.7848	7.1957	488.7296	479.1245	3.6417	23.4375	31.5000	8.0625

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	334.9129	73.0590	326.8471	1078.2657	0.3106	-0.0035	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.7792	7.2823	490.4425	479.0682	451.3937	0.0211	0.2104

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	340.7590	0.0000	340.7590	1077.9136	0.3161	0.0885	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.2478	490.1251	479.0587	0.0000	0.0600	0.0579	-0.0717

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8386	7.7606	1.0458	499.4543	7.3021	273.4493	2.1198

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
45448.680	0.399	105.450	390602.438	0.250717E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 1.684 EfDer = 0.973 SH = 0.262573E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
41.058	1951.430	7.761	499.454	1.000	1.000	0.980

W Kg/sec = 18.663 Wdry = 41.047 WH2O = 0.011 lbm/sec H2O = 0.171g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
76.315	1988.672	1.381	0.249	53.357	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60798.211	32212.584	2.298	513.330	223.426	395.845	1.772

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	284.25	-0.10	284.25	0.26	0.40	334.24
MEAN	16.97	0.00	-0.02	284.25	-0.10	284.25	0.26	0.38	
HUB	14.32	0.00	-0.02	284.25	-0.10	284.25	0.26	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.09	46.36	2.73	327.99	434.10	7.40	492.96	479.02	3.35
MEAN	45.48	43.80	1.68	289.00	405.44	7.40	492.96	479.02	3.35
HUB	40.64	37.84	2.80	243.86	374.59	7.40	492.96	479.02	3.35

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	323.33	104.43	306.00	1084.85	0.30	2.16	1.89	8.34
MEAN	16.57	330.14	123.14	306.32	1084.66	0.30	2.24	1.97	6.35
HUB	13.89	355.66	179.78	306.87	1084.49	0.33	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	321.52	375.18	217.09	0.35	1973.53	0.92	0.89		
MEAN	282.24	345.17	159.10	0.32	2042.64	0.92	0.89	0.89	1.26
HUB	236.54	312.08	56.76	0.29	2498.57	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.03	1.04	7.56	504.85	1.01	496.46	482.20	3.03
MEAN	8.04	1.04	7.55	505.04	1.01	496.29	482.32	3.04
HUB	8.11	1.04	7.53	506.29	1.01	496.13	483.06	3.06

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	18.84	35.35	31.50	3.85	0.93	0.22	1.40
MEAN	21.90	27.45	23.50	3.95	0.91	0.24	1.62
HUB	30.36	10.48	6.50	3.98	0.91	0.29	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.973	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	358.7962	123.8371	336.7478	1083.3075	0.3312	-0.1450	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0575	7.4756	495.0540	482.5609	3.1776	20.1907	32.4000	12.2093

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	343.2218	76.9746	334.4789	1084.2699	0.3165	-0.0655	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.0477	7.5147	495.9322	482.5229	432.2457	0.0291	0.1740

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	340.9997	0.0000	340.9997	1084.4017	0.3145	0.0348	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.4959	496.0543	482.4861	0.0000	0.0600	0.0821	-0.1019

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7673	8.0205	1.0335	505.3956	5.9417	314.6474	2.4391

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
36985.910	0.358	85.815	404643.688	0.271504E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-0.718 EfDer = 0.938 SH = 0.284628E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
41.058	1951.430	8.020	505.396	1.000	1.000	0.980

W Kg/sec = 18.663 Wdry = 41.046 WH2O = 0.012 lbm/sec H2O = 0.189g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
74.280	1976.949	1.381	0.249	53.358	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
59443.031	32212.305	2.344	509.668	217.473	384.739	1.769

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	279.91	-0.10	279.91	0.26	0.39	316.05
MEAN	15.91	0.00	-0.02	279.91	-0.10	279.91	0.26	0.36	
HUB	13.07	0.00	-0.02	279.91	-0.10	279.91	0.26	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	48.11	47.36	0.75	311.98	419.22	7.66	499.10	482.44	2.95
MEAN	44.08	44.80	-0.72	270.99	389.67	7.66	499.10	482.44	2.95
HUB	38.50	38.84	-0.34	222.57	357.68	7.66	499.10	482.44	2.95

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	314.90	89.15	302.02	1090.67	0.29	2.05	1.78	7.43
MEAN	15.50	320.20	105.52	302.32	1090.48	0.29	2.13	1.86	5.75
HUB	12.59	341.56	157.89	302.88	1090.29	0.31	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	305.51	371.52	216.36	0.34	1601.07	0.92	0.86		
MEAN	263.92	341.30	158.39	0.31	1636.87	0.92	0.86	0.86	1.23
HUB	214.40	308.11	56.52	0.28	1989.03	0.92	0.86		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.24	1.03	7.78	509.78	1.01	501.81	484.94	2.74
MEAN	8.24	1.03	7.77	509.87	1.01	501.64	485.00	2.76
HUB	8.29	1.03	7.75	510.84	1.01	501.47	485.56	2.77

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	16.45	35.62	31.50	4.12	0.93	0.19	1.40
MEAN	19.24	27.65	23.50	4.15	0.90	0.21	1.64
HUB	27.53	10.57	6.50	4.07	0.90	0.25	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.938	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	361.7520	107.4571	345.4237	1088.3124	0.3324	-0.2499	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2487	7.6489	499.6504	485.2124	2.9415	17.2803	33.0000	15.7197

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   358.9044    81.9561   349.4217  1088.4954     0.3297    -0.2778     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.2217     7.6330   499.8150   485.1683   410.5396     0.0751     0.1423

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   349.1546     0.0000   349.1546  1089.0991     0.3206     0.0017     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.6499   500.3694   485.1376     0.0000     0.0600     0.1054    -0.2432

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6740     8.2069     1.0232   510.1620     4.7667   366.9999     2.8450

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  29674.760       0.318      68.852  428692.844   0.294440E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0801   Tt4 =   510.1620   T1  =   472.3225

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    235510.58    546.4335     88.4287      1.2601      0.8219      9.0317     1.0801     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 20047 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.403   EfDer =  0.998    SH =  0.326391E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     50.861    1792.631       7.939     487.555       1.000       1.000       0.980
  W Kg/sec =  23.119  Wdry =  50.844  WH2O = 0.017  lbm/sec   H2O =   0.226g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     91.301    1849.000       1.381       0.249      53.359      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  70709.500   39902.941       3.111     831.557     267.316     619.754       2.318

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   204.08    -0.07   204.08     0.19     0.36   332.87
 MEAN    17.06     0.00    -0.02   204.08    -0.07   204.08     0.19     0.31
 HUB     12.51     0.00    -0.02   204.08    -0.07   204.08     0.19     0.26

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.70    50.47     7.23   322.73   381.90     7.74   484.21   472.90     6.24
 MEAN    52.60    47.20     5.40   266.88   336.02     7.74   484.21   472.90     6.24
 HUB     43.81    38.62     5.19   195.70   282.80     7.74   484.21   472.90     6.24

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.79   170.82   282.10  1075.19      0.31     7.29     6.52    16.04
 MEAN    18.04   344.69   196.39   283.27  1074.35      0.32     7.43     6.80    12.53
 HUB     15.00   388.53   263.13   285.86  1072.63      0.36     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    322.73   320.40   151.91     0.30  3525.49      0.92     0.91
 MEAN   282.15   295.97    85.76     0.28  3543.33      0.92     0.91     0.91     1.27
 HUB    234.65   287.27    28.48     0.27  3947.83      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.43     1.06     7.90   496.41     1.02   487.68   478.71     5.81
 MEAN     8.43     1.06     7.86   496.46     1.02   486.92   478.78     5.96
 HUB      8.49     1.07     7.76   497.48     1.02   485.35   479.51     6.28

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.20    28.30    24.20     4.10     0.93     0.29     1.80
 MEAN    34.73    16.84    12.70     4.14     0.92     0.25     2.22
 HUB     42.63    -5.69    -9.30     3.61     0.92     0.15     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.998       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   361.8823   196.0108   304.2016  1073.6320     0.3371    -0.0744     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     8.4422     7.8119   486.2649   479.0180     6.1324    32.7955    35.4000     2.6045

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   309.3062    75.6657   299.9083  1076.7542     0.2873     0.2234     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     8.4398     7.9759   489.0991   478.8997   554.9116     0.0141     0.3453

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   306.9932     0.0000   306.9932  1076.8745     0.2851     0.2483     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     7.9684   489.2137   478.8948     0.0000     0.0600     0.0389     0.2110
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8717     8.4246     1.0611   496.7826     9.2281   224.0152     1.7366

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57456.695       0.552     165.142  509592.969   0.354378E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 2.968   EfDer =  0.985    SH =  0.378929E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     50.861    1792.631       8.425     496.782       1.000       1.000       0.980
 W Kg/sec =  23.119  Wdry =  50.842  WH2O = 0.019  lbm/sec   H2O =   0.269g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     86.851    1831.749       1.381       0.249      53.361      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68958.469   39902.121       2.322     590.487     254.296     468.502       1.842

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   280.28    -0.10   280.28     0.26     0.40   328.48
 MEAN    18.08     0.00    -0.02   280.28    -0.10   280.28     0.26     0.37
 HUB     15.21     0.00    -0.02   280.28    -0.10   280.28     0.26     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     48.93     46.36     2.57   321.48   426.57     8.04   490.47   478.93     5.81
 MEAN    45.27     42.30     2.97   282.81   398.24     8.04   490.47   478.93     5.81
 HUB     40.34     37.84     2.50   237.94   367.72     8.04   490.47   478.93     5.81

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   322.93   104.42   305.58  1081.87      0.30     2.33     2.04     9.02
 MEAN    18.01   330.14   124.36   305.82  1081.75      0.31     2.40     2.13     7.35
 HUB     15.22   356.55   182.55   306.28  1081.64      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    319.44   373.65   215.02     0.35  2134.30      0.92     0.90
 MEAN   281.74   343.94   157.38     0.32  2241.44      0.92     0.90      0.90     1.24
 HUB    238.14   311.28    55.59     0.29  2780.49      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.73     1.04     8.21   502.14     1.01   493.77   482.23     5.25
 MEAN     8.74     1.04     8.20   502.41     1.01   493.66   482.40     5.27
 HUB      8.82     1.05     8.19   503.77     1.01   493.56   483.25     5.28

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     18.87    35.13    31.50     3.63     0.93     0.21     1.40
 MEAN    22.13    27.23    23.50     3.73     0.91     0.23     1.63
 HUB     30.80    10.29     6.50     3.79     0.91     0.28     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.985       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   367.1811   124.7079   345.3547  1079.8682     0.3400    -0.1954     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.7562     8.0914   491.9495   482.7006     5.5848    19.8547    30.6000    10.7453

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   341.1415    72.3244   333.3867  1081.4954     0.3154    -0.0497     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.7469     8.1715   493.4304   482.6238   491.5697     0.0265     0.1577

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   354.0062     0.0000   354.0062  1080.7053     0.3276     0.0192     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1042	492.7123	482.6304	0.0000	0.0600	0.0729	-0.1693

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7934	8.7208	1.0352	502.7755	5.9932	305.7462	2.3701

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
37322.313	0.366	107.272	472609.000	0.387922E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =-0.411 EfDer = 0.943 SH = 0.399389E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
50.861	1792.631	8.721	502.775	1.000	1.000	0.980

W Kg/sec = 23.119 Wdry = 50.841 WH2O = 0.020 lbm/sec H2O = 0.289g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
84.406	1820.799	1.381	0.249	53.361	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
67684.922	39901.801	2.207	545.479	247.142	424.468	1.718

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	297.80	-0.10	297.80	0.27	0.40	318.89
MEAN	17.74	0.00	-0.02	297.80	-0.10	297.80	0.27	0.38	
HUB	15.05	0.00	-0.02	297.80	-0.10	297.80	0.27	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	46.52	46.36	0.16	313.97	432.81	8.28	495.65	482.54	5.12
MEAN	42.99	43.40	-0.41	277.49	407.12	8.28	495.65	482.54	5.12
HUB	38.34	38.84	-0.50	235.44	379.69	8.28	495.65	482.54	5.12

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	335.07	79.03	325.62	1086.15	0.31	2.26	1.98	8.75
MEAN	17.51	341.76	104.80	325.30	1086.49	0.31	2.34	2.07	6.78
HUB	14.85	367.87	171.71	325.33	1086.83	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	309.90	399.16	230.87	0.37	1567.72	0.92	0.86		
MEAN	273.87	366.61	169.07	0.34	1836.49	0.92	0.86	0.86	1.18
HUB	232.31	330.93	60.60	0.30	2551.44	0.92	0.86		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.94	1.02	8.37	506.71	1.01	497.70	484.90	4.83
MEAN	8.97	1.03	8.39	507.39	1.01	498.01	485.29	4.78
HUB	9.07	1.04	8.39	509.19	1.01	498.32	486.37	4.72

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	13.64	35.34	31.50	3.84	0.93	0.14	1.40
MEAN	17.86	27.46	23.50	3.96	0.90	0.18	1.62
HUB	27.82	10.55	6.50	4.05	0.90	0.24	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.943	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	382.1121	105.4868	367.2631	1084.3368	0.3524	-0.2099	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.9887	8.2585	496.0391	485.6052	5.0973	16.0253	31.5000	15.4747

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	369.2670	80.5531	360.3738	1085.1875	0.3403	-0.1551	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.9709	8.2889	496.8138	485.5474	451.3937	0.0392	0.1134

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	376.7187	0.0000	376.7187	1084.6986	0.3473	-0.0451	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.2256	496.3675	485.5217	0.0000	0.0600	0.1038	-0.2587

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.6655	8.9314	1.0241	507.7624	4.9872	347.6439	2.6949

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
31060.398	0.323	89.274	478511.188	0.408031E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =-3.500 EfDer = 0.883 SH = 0.419688E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
50.861	1792.631	8.931	507.762	1.000	1.000	0.980

W Kg/sec = 23.119 Wdry = 50.840 WH2O = 0.021 lbm/sec H2O = 0.307g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
82.824	1811.836	1.381	0.249	53.362	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
66985.430	39901.480	2.117	513.330	242.512	395.845	1.632

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	313.18	-0.11	313.18	0.29	0.40	304.52
MEAN	16.97	0.00	-0.02	313.18	-0.11	313.18	0.29	0.38	
HUB	14.32	0.00	-0.02	313.18	-0.11	313.18	0.29	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	43.90	46.36	-2.46	301.30	434.66	8.44	499.89	485.40	4.65
MEAN	40.30	43.80	-3.50	265.48	410.63	8.44	499.89	485.40	4.65
HUB	35.59	37.84	-2.25	224.02	385.12	8.44	499.89	485.40	4.65

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	345.69	51.64	341.81	1089.33	0.32	2.16	1.89	8.34
MEAN	16.57	350.56	81.01	341.07	1090.04	0.32	2.24	1.97	6.35
HUB	13.89	373.70	153.20	340.86	1090.72	0.34	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	295.35	419.80	243.71	0.39	977.05	0.92	0.81		
MEAN	259.28	384.85	178.27	0.35	1344.44	0.92	0.81	0.81	1.13
HUB	217.29	346.83	64.09	0.32	2129.47	0.92	0.81		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.06	1.01	8.46	510.22	1.00	500.62	486.85	4.57
MEAN	9.11	1.02	8.49	511.14	1.01	501.27	487.37	4.47
HUB	9.21	1.03	8.50	513.11	1.01	501.90	488.50	4.37

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	8.59	35.49	31.50	3.99	0.93	0.08	1.40
MEAN	13.36	27.59	23.50	4.09	0.89	0.12	1.62
HUB	24.20	10.65	6.50	4.15	0.89	0.20	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.883	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	384.5955	81.4633	375.8689	1088.2291	0.3534	-0.1725	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1188	8.3740	499.6138	487.6445	4.7159	12.2288	32.4000	20.1712

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	385.6340	86.4864	375.8107	1088.1631	0.3544	-0.2084	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.0930     8.3463   499.5493   487.6138   432.2457     0.0501     0.0776

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   384.1392     0.0000   384.1392  1088.2643     0.3530    -0.0948     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.3033   499.6417   487.5415     0.0000     0.0600     0.1322    -0.2751

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.4548     9.0400     1.0122   511.4890     3.7268   430.2679     3.3354

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  23212.771       0.266      66.718  498484.969   0.428061E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-6.372   EfDer =  0.820    SH =  0.440314E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     50.861    1792.631       9.040     511.489       1.000       1.000       0.980
 W Kg/sec =  23.119  Wdry =  50.839  WH2O = 0.022  lbm/sec   H2O =   0.324g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.128    1805.223       1.381       0.249      53.363      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66659.672   39901.160       2.119     509.668     240.479     384.739       1.600

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   313.90    -0.11   313.90     0.29     0.39   288.60
 MEAN   15.91     0.00    -0.02   313.90    -0.11   313.90     0.29     0.37
 HUB    13.07     0.00    -0.02   313.90    -0.11   313.90     0.29     0.34

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    42.41    47.36    -4.95   286.59   425.12     8.54   503.58   487.41     4.28
 MEAN   38.43    44.80    -6.37   248.94   400.69     8.54   503.58   487.41     4.28
 HUB    33.09    38.84    -5.75   204.46   374.67     8.54   503.58   487.41     4.28

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   344.77    33.48   343.14  1092.40      0.32     2.05     1.78     7.43
 MEAN   15.50   347.93    61.82   342.40  1093.19      0.32     2.13     1.86     5.75
 HUB    12.59   366.84   132.08   342.23  1093.93      0.34     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   280.65   422.89   247.16     0.39   602.69      0.92     0.75
 MEAN  242.44   387.12   180.62     0.35   959.70      0.92     0.75     0.75     1.10
 HUB   196.95   348.33    64.88     0.32  1664.28      0.92     0.75

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     9.11     1.01     8.51   513.00     1.00   503.46   488.30     4.32
 MEAN    9.16     1.01     8.54   513.90     1.00   504.18   488.79     4.22
 HUB     9.24     1.02     8.56   515.67     1.01   504.87   489.77     4.12

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     5.57    35.76    31.50     4.26     0.93     0.03     1.40
 MEAN   10.23    27.81    23.50     4.31     0.87     0.08     1.64
 HUB    21.10    10.73     6.50     4.23     0.87     0.16     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.820       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   397.8221    62.9485   392.8102  1090.2588     0.3649    -0.2852     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.1582     8.3636   501.4852   489.0640     4.5942     9.1043    33.0000    23.8957
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   411.7576    94.0252   400.8785  1089.2799     0.3780    -0.4487     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.0990     8.2552   500.5791   489.0250   410.5396     0.1136     0.0509

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   400.3325     0.0000   400.3325  1090.0931     0.3672    -0.1032     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2816   501.3238   488.9675     0.0000     0.0600     0.1453    -0.4069

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.2245     9.0790     1.0043   514.1904     2.7015   546.3323     4.2351

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  16827.703       0.214      48.366  530610.438   0.449068E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0546   Tt4 =   514.1904   T1  =   487.5548

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    165879.88    476.7722     91.3007      1.1435      0.6896      5.4031      1.0546     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 15435 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 6.478   EfDer =  1.000    SH =  0.534222E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     49.699    1582.520       9.337     500.812       1.000       1.000       0.980
 W Kg/sec =  22.590  Wdry =  49.672  WH2O = 0.027  lbm/sec   H2O =   0.426g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.882    1610.535       1.380       0.249      53.366      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60028.742   38988.039       3.694     831.557     225.134     619.754       2.753

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   173.25    -0.06   173.25     0.16     0.31   289.94
 MEAN    17.06     0.00    -0.02   173.25    -0.06   173.25     0.16     0.27
 HUB     12.51     0.00    -0.02   173.25    -0.06   173.25     0.16     0.23

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.70    50.47     8.23   284.90   333.50     9.18   498.40   482.52     6.81
 MEAN    53.68    47.20     6.48   235.60   292.49     9.18   498.40   482.52     6.81
 HUB     44.93    38.62     6.31   172.76   244.71     9.18   498.40   482.52     6.81

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   286.13   155.89   239.94  1090.11      0.26     7.29     6.52    16.04
 MEAN    18.04   298.46   176.40   240.75  1089.39      0.27     7.43     6.80    12.53
 HUB     15.00   335.11   231.40   242.40  1088.06      0.31     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    284.90   272.42   129.01     0.25  3217.26      0.92     0.91
 MEAN   249.08   251.49    72.68     0.23  3182.50      0.92     0.91     0.91     1.30
 HUB    207.15   243.61    24.24     0.22  3471.68      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.79     1.05     9.33   507.94     1.01   501.37   487.00     6.45
 MEAN     9.78     1.05     9.29   507.87     1.01   500.72   486.99     6.58
 HUB      9.82     1.05     9.21   508.51     1.02   499.50   487.46     6.84

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     33.01    28.27    24.20     4.07     0.93     0.31     1.80
 MEAN    36.23    16.80    12.70     4.10     0.93     0.28     2.22
 HUB     43.67    -5.71    -9.30     3.59     0.93     0.17     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   312.4910   176.0535   258.1778  1088.9017     0.2870    -0.0700     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.7914     9.2544   500.2697   487.1692     6.7078    34.2904    35.4000     1.1096

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   263.3343    64.4196   255.3332  1091.3689     0.2413     0.2506     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.7906     9.4071   502.5411   487.0522   554.9116     0.0114     0.3653

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   261.2955     0.0000   261.2955  1091.4568     0.2394     0.2714     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.4001   502.6270   487.0530     0.0000     0.0600     0.0370     0.2372
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8770     9.7773     1.0471   508.1055     7.2935   217.2342     1.6840

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  45450.492       0.560     127.649  485437.594   0.571386E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.953   EfDer =  0.992    SH =  0.603769E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.699    1582.520       9.777     508.105       1.000       1.000       0.980
 W Kg/sec =  22.590  Wdry =  49.669  WH2O = 0.030  lbm/sec   H2O =   0.491g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.954    1598.934       1.380       0.249      53.368      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58816.742   38986.969       2.727     590.487     216.570     468.502       2.163

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   239.06    -0.08   239.06     0.22     0.34   286.73
 MEAN    18.08     0.00    -0.02   239.06    -0.08   239.06     0.22     0.32
 HUB     15.21     0.00    -0.02   239.06    -0.08   239.06     0.22     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.90    46.36     3.54   283.80   371.13     9.46   503.52   487.10     6.51
 MEAN    46.25    42.30     3.95   249.66   345.72     9.46   503.52   487.10     6.51
 HUB     41.32    37.84     3.48   210.05   318.28     9.46   503.52   487.10     6.51

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   279.15    98.49   261.20  1095.44      0.25     2.33     2.04     9.02
 MEAN    18.01   285.39   114.41   261.45  1095.26      0.26     2.40     2.13     7.35
 HUB     15.22   308.37   162.89   261.84  1095.08      0.28     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    282.00   319.22   183.51     0.29  2012.84      0.92     0.91
 MEAN   248.72   293.93   134.31     0.27  2062.03      0.92     0.91     0.91     1.27
 HUB    210.23   266.08    47.34     0.24  2480.99      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.06     1.03     9.62   512.57     1.01   506.31   489.74     6.01
 MEAN    10.07     1.03     9.61   512.67     1.01   506.14   489.82     6.05
 HUB     10.13     1.04     9.59   513.60     1.01   505.97   490.39     6.07

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     20.66    35.09    31.50     3.59     0.93     0.23     1.40
 MEAN    23.63    27.19    23.50     3.69     0.92     0.25     1.63
 HUB     31.89    10.25     6.50     3.75     0.92     0.29     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.992       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   315.9029   114.7326   294.3315  1093.9529     0.2888    -0.1855     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.0831     9.5235   504.9416   490.0491     6.2821    21.2962    30.6000     9.3038

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   291.0335    61.7012   284.4178  1095.2659     0.2657    -0.0176     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.0784     9.6021   506.1524   489.9773   491.5697     0.0199     0.1763

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   301.3610     0.0000   301.3610  1094.7319     0.2753     0.0441     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.5482	505.6616	489.9879	0.0000	0.0600	0.0645	-0.1305

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8189	10.0571	1.0286	512.9478	4.8425	292.2964	2.2659

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
30183.654	0.380	84.772	449734.563	0.615537E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 0.490 EfDer = 0.957 SH = 0.630334E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.699	1582.520	10.057	512.948	1.000	1.000	0.980

W Kg/sec = 22.590 Wdry = 49.668 WH2O = 0.031 lbm/sec H2O = 0.521g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.239	1591.369	1.380	0.249	53.369	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
57899.246	38986.566	2.578	545.479	211.551	424.468	2.006

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	254.75	-0.09	254.75	0.23	0.34	278.71
MEAN	17.74	0.00	-0.02	254.75	-0.09	254.75	0.23	0.32	
HUB	15.05	0.00	-0.02	254.75	-0.09	254.75	0.23	0.30	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	47.42	46.36	1.06	277.17	376.52	9.69	507.74	489.91	5.93
MEAN	43.89	43.40	0.49	244.97	353.48	9.69	507.74	489.91	5.93
HUB	39.22	38.84	0.38	207.84	328.83	9.69	507.74	489.91	5.93

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	288.86	76.28	278.61	1098.99	0.26	2.26	1.98	8.75
MEAN	17.51	295.01	97.26	278.52	1099.13	0.27	2.34	2.07	6.78
HUB	14.85	318.08	153.44	278.62	1099.29	0.29	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	273.58	341.39	197.30	0.31	1512.87	0.92	0.88		
MEAN	241.77	313.77	144.51	0.29	1704.21	0.92	0.88	0.88	1.20
HUB	205.08	283.37	51.64	0.26	2279.87	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.27	1.02	9.79	516.30	1.01	509.61	491.86	5.64
MEAN	10.29	1.02	9.80	516.72	1.01	509.74	492.10	5.62
HUB	10.38	1.03	9.80	518.00	1.01	509.88	492.86	5.59

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	15.31	35.30	31.50	3.80	0.93	0.17	1.40
MEAN	19.25	27.42	23.50	3.92	0.90	0.20	1.62
HUB	28.84	10.50	6.50	4.00	0.90	0.26	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.957	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	328.2587	97.8963	313.3210	1097.6422	0.2991	-0.1995	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3074	9.6955	508.3636	492.3500	5.8631	17.3513	31.5000	14.1487

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	314.8966	68.6926	307.3128	1098.3892	0.2867	-0.1218	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.2969	9.7333	509.0529	492.2993	451.3937	0.0304	0.1306

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   320.5998     0.0000   320.5998  1098.0741     0.2920    -0.0224     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6818   508.7622   492.2816     0.0000     0.0600     0.0949    -0.2217

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.7093    10.2636     1.0205   517.0074     4.0599   330.9730     2.5657

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  25308.199       0.338      71.079  455803.063   0.641440E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =-2.626   EfDer =  0.902    SH =  0.656142E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.699    1582.520      10.264     517.007       1.000       1.000       0.980
 W Kg/sec =  22.590  Wdry =  49.666  WH2O = 0.033  lbm/sec   H2O =   0.548g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     71.065    1585.108       1.380       0.249      53.370      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57336.824   38986.172       2.467     513.330     208.118     395.845       1.902

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   268.07    -0.09   268.07     0.24     0.34   266.41
 MEAN    16.97     0.00    -0.02   268.07    -0.09   268.07     0.24     0.32
 HUB     14.32     0.00    -0.02   268.07    -0.09   268.07     0.24     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     44.79    46.36    -1.57   265.98   377.70     9.85   511.24   492.18     5.51
 MEAN    41.17    43.80    -2.63   234.37   356.14     9.85   511.24   492.18     5.51
 HUB     36.43    37.84    -1.41   197.76   333.18     9.85   511.24   492.18     5.51

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   296.86    52.62   292.16  1101.71     0.27     2.16     1.89     8.34
 MEAN    16.57   301.68    76.54   291.81  1102.12     0.27     2.24     1.97     6.35
 HUB     13.89   322.37   137.13   291.75  1102.52     0.29     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    260.73   358.70   208.11     0.33   995.24     0.92     0.83
 MEAN   228.89   329.18   152.34     0.30  1270.21     0.92     0.83     0.83     1.15
 HUB    191.82   296.83    54.69     0.27  1906.10     0.92     0.83

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.40     1.01     9.89   519.21     1.00   512.14   493.45     5.40
 MEAN    10.43     1.02     9.91   519.82     1.01   512.52   493.78     5.33
 HUB     10.52     1.02     9.92   521.23     1.01   512.89   494.58     5.26

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     10.21    35.46    31.50     3.96     0.93     0.10     1.40
 MEAN    14.70    27.57    23.50     4.07     0.89     0.14     1.62
 HUB     25.18    10.62     6.50     4.12     0.89     0.21     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.902       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   329.6908    76.9754   320.5789  1100.8733     0.2995    -0.1640     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.4426     9.8210   511.3693   494.0026     5.5234    13.5019    32.4000    18.8981

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   328.2519    73.6173   319.8903  1100.9581     0.2982    -0.1766     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4263     9.8109   511.4452   493.9794   432.2457     0.0402     0.0938

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   326.5255     0.0000   326.5255  1101.0558     0.2966    -0.0759     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.7738   511.5358   493.9206     0.0000     0.0600     0.1254    -0.2451

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.5230    10.3802     1.0114   520.0879     3.0806   405.0847     3.1402

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  19205.729       0.283      53.940  475102.563   0.666683E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-5.493   EfDer =  0.839    SH =  0.681755E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.699    1582.520      10.380     520.088       1.000       1.000       0.980
 W Kg/sec =  22.590  Wdry =  49.665  WH2O = 0.034  lbm/sec   H2O =   0.572g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     70.476    1580.407       1.380       0.249      53.370      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57027.391   38985.777       2.469     509.668     206.396     384.739       1.864

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   268.54    -0.09   268.54     0.24     0.33   252.66
 MEAN   15.91     0.00    -0.02   268.54    -0.09   268.54     0.24     0.31
 HUB    13.07     0.00    -0.02   268.54    -0.09   268.54     0.24     0.29

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    43.30    47.36    -4.06   253.00   369.01     9.97   514.30   493.81     5.18
 MEAN   39.31    44.80    -5.49   219.76   347.06     9.97   514.30   493.81     5.18
 HUB    33.92    38.84    -4.92   180.50   323.61     9.97   514.30   493.81     5.18

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   295.22    36.95   292.89  1104.31     0.27     2.05     1.78     7.43
 MEAN   15.50   298.59    59.85   292.53  1104.76     0.27     2.13     1.86     5.75
 HUB    12.59   315.63   118.59   292.51  1105.21     0.29     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   247.75   360.86   210.80     0.33   664.64     0.92     0.77
 MEAN  214.02   330.67   154.17     0.30   929.02     0.92     0.77     0.77     1.12
 HUB   173.87   297.68    55.28     0.27  1494.20     0.92     0.77

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP    10.46     1.01     9.96   521.56     1.00   514.57   494.65     5.17
 MEAN   10.50     1.01     9.98   522.15     1.00   514.99   494.96     5.10
 HUB    10.57     1.02     9.99   523.40     1.01   515.41   495.65     5.03

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     7.19    35.74    31.50     4.24     0.93     0.06     1.40
 MEAN   11.56    27.79    23.50     4.29     0.87     0.10     1.64
 HUB    22.07    10.70     6.50     4.20     0.87     0.17     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.839       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   339.4348    60.9488   333.9180  1102.7563     0.3078    -0.2726     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.4971     9.8385   513.1272   495.1886     5.3873    10.3441    33.0000    22.6559
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   348.2792    79.5298   339.0773  1102.2368     0.3160    -0.3986     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4580     9.7680   512.6392   495.1678   410.5396     0.0939     0.0658

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   339.1496     0.0000   339.1496  1102.7795     0.3075    -0.0905     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.7789   513.1425   495.1114     0.0000     0.0600     0.1424    -0.3781

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.3153    10.4324     1.0050   522.3679     2.2801   506.2393     3.9243

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  14216.211       0.232      39.927  506267.531   0.692478E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0430   Tt4 =   522.3679   T1  =   500.8123

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    134364.28    377.3661     76.8815      1.1173      0.7208      6.4777     1.0430     37.3740
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25µm, ISA +36R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
*********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 10% 39000 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.118   EfDer =  0.957    SH =  0.157989E-03

    W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.354    2465.824       4.265     477.914       1.000       1.000       0.980
  W Kg/sec =  11.979  Wdry =  26.349  WH2O = 0.004  lbm/sec   H2O =   0.060g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     87.196    2568.871       1.381       0.248      53.353      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66741.695   20676.977       3.258     831.557     255.251     619.754       2.428

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   192.63    -0.07   192.63     0.18     0.46   462.46
 MEAN    17.06     0.00    -0.02   192.63    -0.07   192.63     0.18     0.39
 HUB     12.51     0.00    -0.02   192.63    -0.07   192.63     0.18     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.55    50.47    16.08   443.92   483.98      4.17   474.93   460.84     2.42
 MEAN    62.32    47.20    15.12   367.11   414.63      4.17   474.93   460.84     2.42
 HUB     54.42    38.62    15.80   269.19   331.07      4.17   474.93   460.84     2.42

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   398.85   304.32   257.81  1074.42      0.37     7.29     6.52    16.04
 MEAN    18.04   404.26   308.54   261.20  1071.31      0.38     7.43     6.80    12.53
 HUB     15.00   438.76   348.99   265.93  1067.45      0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    443.92   293.18   139.60     0.27  6279.55      0.92     0.88
 MEAN   388.11   273.05    79.56     0.25  5566.04      0.92     0.88     0.88     1.74
 HUB    322.78   267.22    26.21     0.25  5235.66      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.91     1.15     4.47   499.64     1.05   486.85   473.47     1.88
 MEAN     4.84     1.13     4.39   497.17     1.04   484.03   472.17     2.08
 HUB      4.80     1.13     4.28   496.03     1.04   480.55   471.61     2.35

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.73    28.44    24.20     4.24     0.93     0.57     1.80
 MEAN    49.75    16.94    12.70     4.24     0.95     0.51     2.22
 HUB     52.69    -5.63    -9.30     3.67     0.95     0.38     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.957       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   416.3228   307.9446   280.1692  1070.9060     0.3888    -0.0370     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8449     4.3712   483.6812   472.4266     2.1461    47.7040    35.4000   -12.3040

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   278.0645    68.0231   269.6159  1079.4109     0.2576     0.5072     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8334     4.6182   491.3993   472.2449   554.9116     0.0344     0.5994

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   276.8794     0.0000   276.8794  1079.4552     0.2565     0.4796     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.5984	491.4521	472.2234	0.0000	0.0600	0.0827	0.4649

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8204	4.8108	1.1281	497.6145	19.7018	169.6211	1.3149

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
122549.633	0.622	182.508	267580.438	0.212974E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =14.654 EfDer = 0.961 SH = 0.271433E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.354	2465.824	4.811	497.614	1.000	1.000	0.980

W Kg/sec = 11.979 Wdry = 26.346 WH2O = 0.007 lbm/sec H2O = 0.111g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.873	2517.524	1.381	0.249	53.357	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62280.418	20676.057	2.557	590.487	230.905	468.502	2.029

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	253.13	-0.09	253.13	0.23	0.47	451.46
MEAN	18.08	0.00	-0.02	253.13	-0.09	253.13	0.23	0.43	
HUB	15.21	0.00	-0.02	253.13	-0.09	253.13	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.22	46.36	13.86	442.20	509.60	4.63	492.46	472.37	2.21
MEAN	56.95	42.30	14.65	389.01	464.20	4.63	492.46	472.37	2.21
HUB	52.29	37.84	14.45	327.29	413.83	4.63	492.46	472.37	2.21

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	366.93	252.24	266.48	1093.80	0.34	2.33	2.04	9.02
MEAN	18.01	367.03	249.53	269.16	1091.33	0.34	2.40	2.13	7.35
HUB	15.22	389.58	278.77	272.14	1088.90	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	439.41	325.64	187.16	0.30	5152.57	0.92	0.88		
MEAN	387.54	302.48	138.02	0.28	4495.59	0.92	0.88	0.88	1.69
HUB	327.57	276.48	48.81	0.25	4244.98	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.38	1.12	4.98	515.44	1.04	504.61	481.58	1.54
MEAN	5.31	1.10	4.91	513.16	1.03	502.34	480.48	1.66
HUB	5.28	1.10	4.84	512.30	1.03	500.10	480.09	1.78

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	43.43	35.08	31.50	3.58	0.93	0.54	1.40
MEAN	42.83	27.15	23.50	3.65	0.95	0.51	1.63
HUB	45.69	10.17	6.50	3.67	0.95	0.50	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.961	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	392.9985	250.2297	303.0395	1090.1022	0.3605	-0.1094	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3190	4.8677	501.2201	480.7439	1.7234	39.5476	30.6000	-8.9476

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	293.2023	62.1610	286.5373	1096.0677	0.2675	0.3575	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.3132	5.0587	506.7230	480.6017	491.5697	0.0242	0.4551

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	303.9026	0.0000	303.9026	1095.5013	0.2774	0.3489	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0252	506.2096	480.5886	0.0000	0.0600	0.0625	0.2760

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8370	5.2974	1.1011	513.6307	16.0172	191.3180	1.4831

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
99673.313	0.516	148.439	243035.516	0.293956E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.669 EfDer = 0.976 SH = 0.324344E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.354	2465.824	5.297	513.631	1.000	1.000	0.980

W Kg/sec = 11.979 Wdry = 26.345 WH2O = 0.009 lbm/sec H2O = 0.141g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.772	2477.962	1.381	0.249	53.359	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
58377.945	20675.627	2.560	545.479	213.055	424.468	1.992

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	256.85	-0.09	256.85	0.23	0.46	433.99
MEAN	17.74	0.00	-0.02	256.85	-0.09	256.85	0.23	0.42	
HUB	15.05	0.00	-0.02	256.85	-0.09	256.85	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.26	46.36	12.90	431.87	502.56	5.10	508.33	480.61	1.57
MEAN	56.07	43.40	12.67	381.70	460.15	5.10	508.33	480.61	1.57
HUB	51.59	38.84	12.75	323.85	413.41	5.10	508.33	480.61	1.57

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	358.79	235.85	270.38	1109.73	0.32	2.26	1.98	8.75
MEAN	17.51	360.87	236.33	272.73	1107.62	0.33	2.34	2.07	6.78
HUB	14.85	385.33	269.58	275.32	1105.55	0.35	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	426.28	330.70	190.43	0.30	4674.01	0.92	0.89		
MEAN	376.71	306.74	140.39	0.28	4138.81	0.92	0.89	0.89	1.64
HUB	319.55	279.82	49.96	0.25	4004.65	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.86	1.11	5.45	529.79	1.03	519.45	488.35	1.16
MEAN	5.79	1.09	5.39	527.94	1.03	517.48	487.51	1.23
HUB	5.77	1.09	5.31	527.48	1.03	515.55	487.34	1.30

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.10	35.16	31.50	3.66	0.93	0.51	1.40
MEAN	40.91	27.24	23.50	3.74	0.94	0.49	1.62
HUB	44.40	10.29	6.50	3.79	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	388.0117	237.8760	306.5422	1106.3495	0.3507	-0.1173	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.8033	5.3360	516.3085	487.7543	1.2820	37.8114	31.5000	-6.3114

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	301.6723	65.8078	294.4071	1111.4609	0.2714	0.3058	2.3726

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.7996     5.5139   521.0921   487.6394   451.3937     0.0188     0.4299

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   306.7641     0.0000   306.7641  1111.1841     0.2761     0.3335     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.4919   520.8433   487.6261     0.0000     0.0600     0.0499     0.2537

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8572     5.7864     1.0923   528.4025    14.7726   196.7667     1.5253

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  91956.719       0.506     136.947  241522.422   0.349909E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =11.084   EfDer =  0.986    SH =  0.385848E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.354    2465.824       5.786     528.402       1.000       1.000       0.980
 W Kg/sec =  11.979  Wdry =  26.343  WH2O = 0.010  lbm/sec   H2O =   0.178g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     67.573    2443.080       1.381       0.249      53.361      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  54941.703   20675.129       2.595     513.330     197.845     395.845       2.001

ROTOR LEADING EDGE CONDITIONS, STAGE   4

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    19.26     0.00    -0.02   256.87    -0.09   256.87     0.23     0.44   410.61
 MEAN   16.97     0.00    -0.02   256.87    -0.09   256.87     0.23     0.40
 HUB    14.32     0.00    -0.02   256.87    -0.09   256.87     0.23     0.36

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    58.21    46.36    11.85   414.44   487.67     5.58   523.10   487.65     1.20
 MEAN   54.88    43.80    11.08   365.18   446.55     5.58   523.10   487.65     1.20
 HUB    50.19    37.84    12.35   308.14   401.23     5.58   523.10   487.65     1.20

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    18.88   345.50   216.06   269.61  1123.98      0.31     2.16     1.89     8.34
 MEAN   16.57   347.50   216.61   271.72  1122.08      0.31     2.24     1.97     6.35
 HUB    13.89   370.45   249.28   274.03  1120.21      0.33     2.26     2.10     4.19

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   406.27   329.95   190.21     0.29  4080.88      0.92     0.90
 MEAN  356.64   305.69   140.03     0.27  3591.53      0.92     0.90      0.90     1.60
 HUB   298.89   278.49    49.61     0.25  3463.77      0.92     0.90

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.31     1.09     5.91   542.51     1.03   532.92   493.99     0.94
 MEAN    6.24     1.08     5.85   540.82     1.02   531.12   493.27     0.99
 HUB     6.23     1.08     5.78   540.37     1.02   529.35   493.11     1.04

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    38.71    35.20    31.50     3.70     0.93     0.48     1.40
 MEAN   38.56    27.26    23.50     3.76     0.94     0.46     1.62
 HUB    42.29    10.26     6.50     3.76     0.94     0.46     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.986       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   369.1219   217.8261   297.9980  1121.1876     0.3292    -0.0927     2.1803

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.2553    5.8087   530.2909   493.4719     1.0156    36.1655    32.4000    -3.7655
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   299.2758    67.1188   291.6523  1125.1412     0.2660     0.2687     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2534     5.9572   534.0400   493.3883   432.2457     0.0146     0.4085

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   296.8831     0.0000   296.8831  1125.2516     0.2638     0.3193     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9513   534.1545   493.3730     0.0000     0.0600     0.0414     0.2544

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8703     6.2423     1.0788   541.2322    12.8306   212.1170     1.6443

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  79895.141       0.484     118.985  247101.438   0.415323E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.632   EfDer =  0.993    SH =  0.458460E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.354    2465.824       6.242     541.232       1.000       1.000       0.980
 W Kg/sec =  11.979  Wdry =  26.341  WH2O = 0.012  lbm/sec   H2O =   0.224g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     63.394    2413.950       1.381       0.249      53.363      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  52012.363   20674.539       2.746     509.668     185.621     384.739       2.073

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   244.92    -0.08   244.92     0.22     0.41   385.91
 MEAN    15.91     0.00    -0.02   244.92    -0.08   244.92     0.22     0.37
 HUB     13.07     0.00    -0.02   244.92    -0.08   244.92     0.22     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.15    47.36    10.79   394.22   464.18     6.04   536.42   493.41     0.98
 MEAN    54.43    44.80     9.63   342.42   421.07     6.04   536.42   493.41     0.98
 HUB     48.96    38.84    10.12   281.25   373.01     6.04   536.42   493.41     0.98

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   328.04   203.01   257.67  1136.79      0.29     2.05     1.78     7.43
 MEAN    15.50   327.15   198.90   259.74  1134.82      0.29     2.13     1.86     5.75
 HUB     12.59   344.29   223.43   261.94  1132.88      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    386.04   316.06   183.03     0.28  3643.58      0.92     0.91
 MEAN   333.48   292.53   134.58     0.26  3083.88      0.92     0.91     0.91     1.59
 HUB    270.92   266.21    47.48     0.23  2814.12      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.73     1.08     6.36   553.82     1.02   545.18   498.79     0.80
 MEAN     6.66     1.07     6.29   551.89     1.02   543.29   498.00     0.84
 HUB      6.62     1.06     6.21   550.96     1.02   541.44   497.64     0.89

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.23    35.39    31.50     3.89     0.93     0.47     1.40
 MEAN    37.44    27.39    23.50     3.89     0.94     0.45     1.64
 HUB     40.46    10.27     6.50     3.77     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   358.3599   202.5514   295.6260  1133.3611     0.3162    -0.1730     2.0437
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    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6628     6.2225   541.9119   498.1636     0.8785    34.4174    33.0000    -1.4174

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   302.1308    68.9918   294.1482  1136.4728     0.2658     0.1506     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6607     6.3456   544.8932   498.0957   410.5396     0.0253     0.3844

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   293.8928     0.0000   293.8928  1136.8743     0.2585     0.3076     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3579   545.2874   498.0929     0.0000     0.0600     0.0373     0.1828

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8792     6.6561     1.0663   552.2207    10.9893   231.7475     1.7965

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  68454.742       0.459     101.947  259059.953   0.492543E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.36541E-02
 trTOT =     1.1555   Tt4 =   552.2207   T1  =   477.9137

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    462529.56    688.8268     87.1961      1.5608      0.8402     15.1175      1.1555     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 38334 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.226   EfDer =  0.957    SH =  0.148941E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.383    2388.222       4.199     471.470       1.000       1.000       0.980
  W Kg/sec =  11.538  Wdry =  25.379  WH2O = 0.004  lbm/sec   H2O =   0.057g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     84.716    2504.974       1.381       0.248      53.353      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64343.285   19915.670       3.353     831.557     247.990     619.754       2.499

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   185.70    -0.06   185.70     0.18     0.44   450.96
 MEAN    17.06     0.00    -0.02   185.70    -0.06   185.70     0.18     0.38
 HUB     12.51     0.00    -0.02   185.70    -0.06   185.70     0.18     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.64    50.47    16.17   429.95   468.40     4.11   468.70   457.05     2.96
 MEAN    62.43    47.20    15.23   355.55   401.19     4.11   468.70   457.05     2.96
 HUB     54.55    38.62    15.93   260.72   320.15     4.11   468.70   457.05     2.96

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   386.19   295.09   249.14  1066.71      0.36     7.29     6.52    16.04
 MEAN    18.04   391.26   299.09   252.25  1063.77      0.37     7.43     6.80    12.53
 HUB     15.00   424.26   337.89   256.57  1060.14      0.40     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    429.95   283.30   134.87     0.27  6088.96      0.92     0.88
 MEAN   375.89   263.68    76.80     0.25  5395.46      0.92     0.88     0.88     1.75
 HUB    312.62   257.81    25.27     0.24  5069.16      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.80     1.14     4.39   491.88     1.04   479.88   469.53     2.31
 MEAN     4.73     1.13     4.32   489.55     1.04   477.24   468.23     2.54
 HUB      4.70     1.12     4.21   488.46     1.04   473.99   467.67     2.85

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.83    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    49.86    16.93    12.70     4.23     0.95     0.52     2.22
 HUB     52.79    -5.63    -9.30     3.67     0.95     0.38     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.957       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   402.8463   298.5078   270.5147  1063.3978     0.3788    -0.0370     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.7411     4.2994   476.9154   468.4842     2.6153    47.8164    35.4000   -12.4164

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   268.9917    65.8036   260.8188  1071.4232     0.2511     0.5084     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.7306     4.5303   484.1455   468.3117   554.9116     0.0339     0.6001

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   267.8201     0.0000   267.8201  1071.4666     0.2500     0.4796     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.5112   484.1958   468.2935     0.0000     0.0600     0.0834     0.4649
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8191     4.7090     1.1214   489.9621    18.4933   169.1561     1.3113

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 115024.242       0.622     164.993  260140.875   0.196791E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.680   EfDer =  0.961    SH =  0.247763E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.383    2388.222       4.709     489.962       1.000       1.000       0.980
 W Kg/sec =  11.538  Wdry =  25.377  WH2O = 0.006  lbm/sec   H2O =   0.101g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     77.012    2457.263       1.381       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60259.551   19914.898       2.619     590.487     225.454     468.502       2.078

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   244.92    -0.08   244.92     0.23     0.46   440.65
 MEAN    18.08     0.00    -0.02   244.92    -0.08   244.92     0.23     0.42
 HUB     15.21     0.00    -0.02   244.92    -0.08   244.92     0.23     0.37

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.24    46.36    13.88   428.29   493.44     4.54   485.14   468.43     2.67
 MEAN    56.98    42.30    14.68   376.77   449.45     4.54   485.14   468.43     2.67
 HUB     52.32    37.84    14.48   316.99   400.66     4.54   485.14   468.43     2.67

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   355.51   244.08   258.49  1084.99     0.33     2.33     2.04     9.02
 MEAN    18.01   355.61   241.58   260.95  1082.66     0.33     2.40     2.13     7.35
 HUB     15.22   377.39   269.98   263.69  1080.37     0.35     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    425.58   315.84   181.50     0.29  4985.78     0.92     0.88
 MEAN   375.35   293.24   133.77     0.27  4352.37     0.92     0.88     0.88     1.69
 HUB    317.27   267.89    47.29     0.25  4111.18     0.92     0.88

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.24     1.11     4.87   506.67     1.03   496.51   477.54     1.88
 MEAN     5.17     1.10     4.80   504.54     1.03   494.38   476.45     2.01
 HUB      5.14     1.09     4.73   503.74     1.03   492.29   476.07     2.16

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.36    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN    42.79    27.14    23.50     3.64     0.95     0.51     1.63
 HUB     45.68    10.17     6.50     3.67     0.95     0.50     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.961       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   380.7180   242.2581   293.6957  1081.5039     0.3520    -0.1095     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   5.1817     4.7615   493.3319   476.7097     2.0948    39.5179    30.6000    -8.9179

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   284.5467    60.3259   278.0784  1087.1234     0.2617     0.3562     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     5.1765     4.9388   498.4737   476.5754   491.5697     0.0235     0.4537

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   294.8640     0.0000   294.8640  1086.5898     0.2714     0.3474     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9075	497.9932	476.5651	0.0000	0.0600	0.0624	0.2744

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8368	5.1616	1.0961	504.9804	15.0192	191.2932	1.4829

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
93451.742	0.516	134.049	236504.031	0.267425E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.609 EfDer = 0.976 SH = 0.293862E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.383	2388.222	5.162	504.980	1.000	1.000	0.980

W Kg/sec = 11.538 Wdry = 25.376 WH2O = 0.007 lbm/sec H2O = 0.127g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
71.327	2420.447	1.381	0.249	53.358	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56669.711	19914.537	2.612	545.479	208.820	424.468	2.033

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	249.34	-0.09	249.34	0.23	0.45	423.91
MEAN	17.74	0.00	-0.02	249.34	-0.09	249.34	0.23	0.41	
HUB	15.05	0.00	-0.02	249.34	-0.09	249.34	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.21	46.36	12.85	418.28	487.03	4.98	499.98	476.59	1.91
MEAN	56.01	43.40	12.61	369.69	445.99	4.98	499.98	476.59	1.91
HUB	51.53	38.84	12.69	313.66	400.75	4.98	499.98	476.59	1.91

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	347.89	227.65	263.06	1100.00	0.32	2.26	1.98	8.75
MEAN	17.51	350.00	228.37	265.22	1098.02	0.32	2.34	2.07	6.78
HUB	14.85	373.79	260.97	267.62	1096.08	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	412.86	321.72	185.21	0.29	4511.55	0.92	0.89		
MEAN	364.86	298.28	136.48	0.27	3999.55	0.92	0.89	0.89	1.64
HUB	309.49	271.98	48.52	0.25	3876.65	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.68	1.10	5.30	520.09	1.03	510.37	484.21	1.42
MEAN	5.62	1.09	5.24	518.38	1.03	508.53	483.40	1.51
HUB	5.60	1.09	5.18	517.96	1.03	506.74	483.23	1.59

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.87	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	40.73	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.28	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	376.3779	229.8719	298.0255	1096.8129	0.3432	-0.1179	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6304	5.1954	507.4282	483.6375	1.5665	37.6436	31.5000	-6.1436

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	293.6434	64.0563	286.5715	1101.6144	0.2666	0.3018	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6272	5.3595	511.8820	483.5290	451.3937	0.0181	0.4264

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	298.5545	0.0000	298.5545	1101.3531	0.2711	0.3302	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3390	511.6483	483.5183	0.0000	0.0600	0.0493	0.2497

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8578	5.6149	1.0878	518.8096	13.8301	197.3074	1.5295

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
86075.461	0.505	123.469	235328.031	0.316185E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.941 EfDer = 0.987 SH = 0.347596E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.383	2388.222	5.615	518.809	1.000	1.000	0.980

W Kg/sec = 11.538 Wdry = 25.374 WH2O = 0.009 lbm/sec H2O = 0.159g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
66.460	2387.970	1.381	0.249	53.360	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53494.066	19914.117	2.638	513.330	194.581	395.845	2.034

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	250.10	-0.09	250.10	0.23	0.43	401.35
MEAN	16.97	0.00	-0.02	250.10	-0.09	250.10	0.23	0.39	
HUB	14.32	0.00	-0.02	250.10	-0.09	250.10	0.23	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.08	46.36	11.72	401.40	473.02	5.42	513.78	483.54	1.46
MEAN	54.74	43.80	10.94	353.69	433.25	5.42	513.78	483.54	1.46
HUB	50.04	37.84	12.20	298.45	389.45	5.42	513.78	483.54	1.46

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	335.31	207.96	263.03	1113.42	0.30	2.16	1.89	8.34
MEAN	16.57	337.41	208.89	264.98	1111.64	0.30	2.24	1.97	6.35
HUB	13.89	359.85	241.13	267.10	1109.90	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	393.48	321.87	185.52	0.29	3927.96	0.92	0.90		
MEAN	345.42	298.08	136.53	0.27	3463.59	0.92	0.90	0.90	1.59
HUB	289.48	271.45	48.35	0.24	3350.55	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.10	1.09	5.73	531.96	1.03	522.93	489.77	1.15
MEAN	6.04	1.08	5.67	530.41	1.02	521.26	489.07	1.21
HUB	6.02	1.07	5.61	530.03	1.02	519.63	488.93	1.27

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.33	35.20	31.50	3.70	0.93	0.48	1.40
MEAN	38.25	27.26	23.50	3.76	0.94	0.46	1.62
HUB	42.07	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.987	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	358.5353	210.0655	290.5513	1110.7858	0.3228	-0.0936	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.0476	5.6319	520.4732	489.2746	1.2464	35.8665	32.4000	-3.4665

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	292.0880	65.5068	284.6476	1114.4829	0.2621	0.2621	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.0461	5.7678	523.9457	489.1957	432.2457	0.0141	0.4031

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	289.7332	0.0000	289.7332	1114.5912	0.2599	0.3140	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.7624	524.0557	489.1829	0.0000	0.0600	0.0407	0.2482

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8713	6.0358	1.0750	530.7981	11.9894	213.3271	1.6537

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
74641.203	0.482	107.067	241043.453	0.373425E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.416 EfDer = 0.994 SH = 0.411267E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.383	2388.222	6.036	530.798	1.000	1.000	0.980

W Kg/sec = 11.538 Wdry = 25.373 WH2O = 0.010 lbm/sec H2O = 0.198g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.536	2360.849	1.381	0.249	53.362	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50776.789	19913.621	2.783	509.668	183.103	384.739	2.101

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	239.10	-0.08	239.10	0.21	0.40	377.42
MEAN	15.91	0.00	-0.02	239.10	-0.08	239.10	0.21	0.37	
HUB	13.07	0.00	-0.02	239.10	-0.08	239.10	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.95	47.36	10.59	381.81	450.57	5.85	526.21	489.21	1.20
MEAN	54.22	44.80	9.42	331.65	408.92	5.85	526.21	489.21	1.20
HUB	48.73	38.84	9.89	272.39	362.51	5.85	526.21	489.21	1.20

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	318.59	194.93	252.00	1125.48	0.28	2.05	1.78	7.43
MEAN	15.50	317.99	191.45	253.90	1123.64	0.28	2.13	1.86	5.75
HUB	12.59	334.87	215.94	255.94	1121.83	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	373.89	309.08	178.96	0.27	3498.56	0.92	0.91		
MEAN	322.99	285.95	131.54	0.25	2968.33	0.92	0.91	0.91	1.58
HUB	262.39	260.12	46.45	0.23	2719.82	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.49	1.07	6.14	542.51	1.02	534.36	494.49	0.99
MEAN	6.42	1.06	6.07	540.73	1.02	532.61	493.73	1.04
HUB	6.38	1.06	6.01	539.90	1.02	530.90	493.39	1.09

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.72	35.38	31.50	3.88	0.93	0.47	1.40
MEAN	37.02	27.39	23.50	3.89	0.94	0.44	1.64
HUB	40.16	10.29	6.50	3.79	0.94	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	348.5475	194.9609	288.9215	1122.2338	0.3106	-0.1748	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.4222	6.0121	531.2928	493.8884	1.0816	34.0110	33.0000	-1.0110

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   295.5288    67.4842   287.7206  1125.1248     0.2627     0.1410     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.4206     6.1238   534.0349   493.8250   410.5396     0.0246     0.3775

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   287.4829     0.0000   287.4829  1125.5137     0.2554     0.3005     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.1353   534.4115   493.8227     0.0000     0.0600     0.0370     0.1733

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8799     6.4162     1.0630   541.0474    10.2501   233.7077     1.8117

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  63833.563       0.457      91.564  252977.313   0.441434E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1476   Tt4 =   541.0474   T1  =   471.4698

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    433026.19    621.1423     84.7163      1.5279      0.8406     15.2263      1.1476     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 37357 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.284   EfDer =  0.956    SH =  0.139870E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.937    2357.693       4.337     469.498       1.000       1.000       0.980
  W Kg/sec =  11.789  Wdry =  25.933  WH2O = 0.004  lbm/sec   H2O =   0.055g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.636    2478.140       1.381       0.248      53.353      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  63364.117   20350.178       3.396     831.557     244.828     619.754       2.531

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   182.88    -0.06   182.88     0.17     0.44   446.13
 MEAN    17.06     0.00    -0.02   182.88    -0.06   182.88     0.17     0.38
 HUB     12.51     0.00    -0.02   182.88    -0.06   182.88     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.69    50.47    16.22   424.46   462.24      4.25   466.81   456.14     3.13
 MEAN    62.48    47.20    15.28   351.01   395.85      4.25   466.81   456.14     3.13
 HUB     54.61    38.62    15.99   257.39   315.80      4.25   466.81   456.14     3.13

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   381.17   291.51   245.58  1064.30      0.36     7.29     6.52    16.04
 MEAN    18.04   386.06   295.38   248.58  1061.43      0.36     7.43     6.80    12.53
 HUB     15.00   418.46   333.51   252.74  1057.88      0.40     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    424.46   279.26   132.95     0.26  6015.10      0.92     0.87
 MEAN   371.09   259.85    75.71     0.24  5328.56      0.92     0.87     0.87     1.75
 HUB    308.62   253.96    24.89     0.24  5003.49      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.95     1.14     4.53   489.40     1.04   477.72   468.60     2.44
 MEAN     4.88     1.12     4.46   487.13     1.04   475.14   467.30     2.68
 HUB      4.84     1.12     4.35   486.05     1.04   471.97   466.73     3.01

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.89    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    49.92    16.94    12.70     4.24     0.95     0.52     2.22
 HUB     52.84    -5.62    -9.30     3.68     0.95     0.38     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.956       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   397.4501   294.8064   266.5629  1061.0652     0.3746    -0.0369     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.8842     4.4388   474.8265   467.5498     2.7612    47.8802    35.4000   -12.4802

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   265.2693    64.8930   257.2095  1068.9005     0.2482     0.5092     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.8738     4.6720   481.8694   467.3863   554.9116     0.0336     0.6007

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   264.1046     0.0000   264.1046  1068.9435     0.2471     0.4797     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.6525   481.9187   467.3685     0.0000     0.0600     0.0838     0.4651
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8185     4.8516     1.1186   487.5262    18.0294   168.9084     1.3094

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 112136.742       0.622     164.360  266552.656   0.183403E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.706   EfDer =  0.961    SH =  0.229768E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.937    2357.693       4.852     487.526       1.000       1.000       0.980
 W Kg/sec =  11.789  Wdry =  25.931  WH2O = 0.006  lbm/sec   H2O =   0.097g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.188    2431.904       1.381       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59430.684   20349.461       2.647     590.487     223.039     468.502       2.101

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   241.55    -0.08   241.55     0.23     0.46   436.11
 MEAN    18.08     0.00    -0.02   241.55    -0.08   241.55     0.23     0.41
 HUB     15.21     0.00    -0.02   241.55    -0.08   241.55     0.23     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.27    46.36    13.91   422.81   487.02     4.68   482.84   467.49     2.81
 MEAN    57.01    42.30    14.71   371.96   443.58     4.68   482.84   467.49     2.81
 HUB     52.34    37.84    14.50   312.94   395.39     4.68   482.84   467.49     2.81

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   350.98   240.97   255.19  1082.14      0.32     2.33     2.04     9.02
 MEAN    18.01   351.05   238.52   257.57  1079.87      0.33     2.40     2.13     7.35
 HUB     15.22   372.52   266.56   260.21  1077.64      0.35     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    420.14   311.81   179.17     0.29  4922.29      0.92     0.88
 MEAN   370.55   289.44   132.03     0.27  4297.26      0.92     0.88     0.88     1.69
 HUB    313.21   264.36    46.65     0.25  4059.17      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.39     1.11     5.01   503.81     1.03   493.90   476.60     1.99
 MEAN     5.32     1.10     4.95   501.74     1.03   491.83   475.52     2.13
 HUB      5.29     1.09     4.88   500.95     1.03   489.80   475.13     2.28

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.36    35.07    31.50     3.57     0.93     0.54     1.40
 MEAN    42.80    27.14    23.50     3.64     0.95     0.51     1.63
 HUB     45.69    10.16     6.50     3.66     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.961       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   375.8010   239.1908   289.8520  1078.7426     0.3484    -0.1094     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3283     4.9046   490.8150   475.7735     2.2131    39.5300    30.6000    -8.9300

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   280.9769    59.5691   274.5898  1084.2273     0.2591     0.3562     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3232     5.0834   495.8203   475.6465   491.5697     0.0233     0.4536

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   291.1380     0.0000   291.1380  1083.7070     0.2687     0.3471     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0517	495.3530	475.6363	0.0000	0.0600	0.0624	0.2741

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8365	5.3080	1.0941	502.1650	14.6397	191.1855	1.4821

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
91086.313	0.516	133.506	242426.391	0.247674E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.599 EfDer = 0.976 SH = 0.271747E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.937	2357.693	5.308	502.165	1.000	1.000	0.980

W Kg/sec = 11.789 Wdry = 25.930 WH2O = 0.007 lbm/sec H2O = 0.121g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.675	2396.195	1.381	0.249	53.357	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55965.797	20349.127	2.636	545.479	206.908	424.468	2.051

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	246.24	-0.08	246.24	0.23	0.44	419.67
MEAN	17.74	0.00	-0.02	246.24	-0.08	246.24	0.23	0.41	
HUB	15.05	0.00	-0.02	246.24	-0.08	246.24	0.23	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.20	46.36	12.84	412.94	480.85	5.12	497.29	475.66	2.02
MEAN	56.00	43.40	12.60	364.96	440.33	5.12	497.29	475.66	2.02
HUB	51.52	38.84	12.68	309.65	395.69	5.12	497.29	475.66	2.02

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	343.55	224.52	260.03	1096.79	0.31	2.26	1.98	8.75
MEAN	17.51	345.66	225.32	262.12	1094.86	0.32	2.34	2.07	6.78
HUB	14.85	369.17	257.60	264.44	1092.97	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	407.59	318.01	183.06	0.29	4449.51	0.92	0.89		
MEAN	360.19	294.79	134.87	0.27	3946.11	0.92	0.89	0.89	1.64
HUB	305.54	268.75	47.94	0.25	3826.61	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.83	1.10	5.45	516.88	1.03	507.39	483.28	1.51
MEAN	5.77	1.09	5.39	515.21	1.03	505.61	482.46	1.60
HUB	5.75	1.08	5.32	514.82	1.03	503.87	482.30	1.69

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.81	35.15	31.50	3.65	0.93	0.50	1.40
MEAN	40.68	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.25	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	371.7148	226.8000	294.5058	1093.6835	0.3399	-0.1180	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7799	5.3414	504.5340	482.7029	1.6607	37.6000	31.5000	-6.1000

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	290.3156	63.3304	283.3239	1098.3650	0.2643	0.3007	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7768	5.5065	508.8640	482.6002	451.3937	0.0179	0.4254

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	295.1533	0.0000	295.1533	1098.1102	0.2688	0.3292	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4858	508.6363	482.5900	0.0000	0.0600	0.0491	0.2485

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8580	5.7644	1.0860	515.6358	13.4716	197.4312	1.5305

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
83839.227	0.505	122.884	241344.547	0.292078E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.898 EfDer = 0.987 SH = 0.320715E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.937	2357.693	5.764	515.636	1.000	1.000	0.980

W Kg/sec = 11.789 Wdry = 25.928 WH2O = 0.008 lbm/sec H2O = 0.151g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.946	2364.688	1.381	0.249	53.359	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52894.801	20348.734	2.659	513.330	193.073	395.845	2.050

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	247.30	-0.09	247.30	0.22	0.42	397.43
MEAN	16.97	0.00	-0.02	247.30	-0.09	247.30	0.22	0.39	
HUB	14.32	0.00	-0.02	247.30	-0.09	247.30	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.04	46.36	11.68	396.27	467.18	5.57	510.72	482.61	1.55
MEAN	54.70	43.80	10.90	349.17	427.94	5.57	510.72	482.61	1.55
HUB	50.00	37.84	12.16	294.63	384.73	5.57	510.72	482.61	1.55

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	331.26	204.89	260.29	1109.89	0.30	2.16	1.89	8.34
MEAN	16.57	333.39	205.94	262.18	1108.16	0.30	2.24	1.97	6.35
HUB	13.89	355.58	237.95	264.23	1106.46	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	388.45	318.51	183.56	0.29	3869.94	0.92	0.90		
MEAN	341.00	294.92	135.07	0.27	3414.61	0.92	0.90	0.90	1.59
HUB	285.78	268.53	47.84	0.24	3306.28	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.25	1.08	5.88	528.43	1.02	519.61	488.83	1.23
MEAN	6.19	1.07	5.82	526.92	1.02	517.99	488.14	1.29
HUB	6.17	1.07	5.75	526.57	1.02	516.41	488.00	1.35

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.21	35.19	31.50	3.69	0.93	0.47	1.40
MEAN	38.15	27.26	23.50	3.76	0.94	0.46	1.62
HUB	42.00	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.987	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	354.2892	207.0945	287.4590	1107.3170	0.3200	-0.0939	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.1993	5.7802	517.2227	488.3372	1.3252	35.7702	32.4000	-3.3702

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	289.0937	64.8353	281.7296	1110.9159	0.2602	0.2600	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.1978     5.9164   520.5921   488.2627   432.2457     0.0139     0.4014

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   286.7560     0.0000   286.7560  1111.0229     0.2581     0.3123     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9111   520.7002   488.2502     0.0000     0.0600     0.0405     0.2461

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8715     6.1875     1.0734   527.3053    11.6703   213.7101     1.6567

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  72648.781       0.481     106.482  247322.906   0.344299E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.343   EfDer =  0.994    SH =  0.378845E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.937    2357.693       6.187     527.305       1.000       1.000       0.980
 W Kg/sec =  11.789  Wdry =  25.927  WH2O = 0.010  lbm/sec   H2O =   0.188g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.129    2338.376       1.381       0.249      53.361      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50262.887   20348.270       2.802     509.668     181.906     384.739       2.115

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   236.68    -0.08   236.68     0.21     0.40   373.83
 MEAN    15.91     0.00    -0.02   236.68    -0.08   236.68     0.21     0.36
 HUB     13.07     0.00    -0.02   236.68    -0.08   236.68     0.21     0.32

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.88    47.36    10.52   376.93   445.15     6.00   522.81   488.28     1.28
 MEAN    54.14    44.80     9.34   327.41   404.06     6.00   522.81   488.28     1.28
 HUB     48.66    38.84     9.82   268.91   358.30     6.00   522.81   488.28     1.28

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   314.82   191.82   249.63  1121.65      0.28     2.05     1.78     7.43
 MEAN    15.50   314.32   188.57   251.47  1119.86      0.28     2.13     1.86     5.75
 HUB     12.59   331.11   213.09   253.44  1118.10      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    369.11   306.18   177.29     0.27  3442.81      0.92     0.91
 MEAN   318.86   283.22   130.29     0.25  2923.65      0.92     0.91     0.91     1.58
 HUB    259.04   257.57    45.95     0.23  2683.81      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.64     1.07     6.29   538.68     1.02   530.72   493.54     1.06
 MEAN     6.57     1.06     6.22   536.97     1.02   529.03   492.78     1.11
 HUB      6.54     1.06     6.16   536.17     1.02   527.37   492.45     1.16

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     37.54    35.38    31.50     3.88     0.93     0.46     1.40
 MEAN    36.86    27.39    23.50     3.89     0.93     0.44     1.64
 HUB     40.06    10.28     6.50     3.78     0.93     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   344.5861   192.0255   286.1220  1118.4822     0.3081    -0.1752     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.5751     6.1617   527.7392   492.9431     1.1525    33.8668    33.0000    -0.8668
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   292.7637    66.8528   285.0286  1121.2882     0.2611     0.1377     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.5736     6.2733   530.3916   492.8835   410.5396     0.0243     0.3751

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   284.7992     0.0000   284.7992  1121.6714     0.2539     0.2978     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.2849   530.7610   492.8810     0.0000     0.0600     0.0369     0.1700

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8801     6.5691     1.0617   537.2744     9.9698   234.3922     1.8170

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  62081.262       0.456      90.993  259680.266   0.406420E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1444   Tt4 =   537.2744   T1  =   469.4978

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    421792.31    618.2261     83.6365      1.5146      0.8406     15.2843      1.1444     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 34281 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.387   EfDer =  0.955    SH =  0.158906E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     27.773    2283.422       4.829     471.208       1.000       1.000       0.980
  W Kg/sec =  12.624  Wdry =  27.769  WH2O = 0.004  lbm/sec   H2O =   0.070g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.588    2395.718       1.381       0.248      53.353      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  61098.543   21790.787       3.525     831.557     235.910     619.754       2.627

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   176.34    -0.06   176.34     0.17     0.42   431.29
 MEAN    17.06     0.00    -0.02   176.34    -0.06   176.34     0.17     0.36
 HUB     12.51     0.00    -0.02   176.34    -0.06   176.34     0.17     0.29

        BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.79    50.47    16.32   411.09    447.37     4.74   468.71   458.15     3.64
 MEAN    62.59    47.20    15.39   339.95    383.02     4.74   468.71   458.15     3.64
 HUB     54.73    38.62    16.11   249.28    305.40     4.74   468.71   458.15     3.64

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   369.11   282.56   237.50  1065.64      0.35     7.29     6.52    16.04
 MEAN    18.04   373.68   286.26   240.19  1062.95      0.35     7.43     6.80    12.53
 HUB     15.00   404.70   322.92   243.93  1059.64      0.38     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    411.09   270.04   128.53     0.25  5830.47      0.92     0.87
 MEAN   359.40   251.08    73.14     0.24  5163.97      0.92     0.87     0.87     1.75
 HUB    298.90   245.11    24.02     0.23  4844.55      0.92     0.87

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP       5.46     1.13     5.03   489.89     1.04   478.94   470.00     2.84
 MEAN      5.39     1.12     4.95   487.75     1.04   476.53   468.76     3.10
 HUB       5.35     1.11     4.85   486.73     1.03   473.56   468.20     3.46

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      49.95    28.42    24.20     4.22     0.93     0.57     1.80
 MEAN     50.00    16.94    12.70     4.24     0.95     0.52     2.22
 HUB      52.93    -5.62    -9.30     3.68     0.95     0.39     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.955       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   384.6293   285.7010   257.5163  1062.6146     0.3620    -0.0369     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.3960     4.9346   476.2311   468.9951     3.1849    47.9701    35.4000   -12.5701

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   256.8732    62.8390   249.0685  1069.9351     0.2401     0.5100     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.3856     5.1765   482.8195   468.8299   554.9116     0.0327     0.6008

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   255.7067     0.0000   255.7067  1069.9767     0.2390     0.4791     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.1557   482.8673   468.8122     0.0000     0.0600     0.0844     0.4645
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8172     5.3619     1.1105   488.1231    16.9163   168.4832     1.3061

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 105227.867       0.623     165.153  284326.656   0.199698E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.705   EfDer =  0.961    SH =  0.242537E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     27.773    2283.422       5.362     488.123       1.000       1.000       0.980
 W Kg/sec =  12.624  Wdry =  27.766  WH2O = 0.007  lbm/sec   H2O =   0.113g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.863    2353.854       1.381       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57560.180   21790.072       2.731     590.487     216.236     468.502       2.167

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   233.95    -0.08   233.95     0.22     0.44   422.11
 MEAN    18.08     0.00    -0.02   233.95    -0.08   233.95     0.22     0.40
 HUB     15.21     0.00    -0.02   233.95    -0.08   233.95     0.22     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.26    46.36    13.90   409.49   471.68     5.19   483.72   468.93     3.17
 MEAN    57.00    42.30    14.70   360.24   429.61     5.19   483.72   468.93     3.17
 HUB     52.34    37.84    14.50   303.08   382.94     5.19   483.72   468.93     3.17

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   340.16   232.90   247.93  1082.30      0.31     2.33     2.04     9.02
 MEAN    18.01   340.26   230.73   250.07  1080.18      0.31     2.40     2.13     7.35
 HUB     15.22   361.04   258.09   252.47  1078.10      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    406.90   302.89   174.00     0.28  4757.54      0.92     0.88
 MEAN   358.88   280.99   128.14     0.26  4156.96      0.92     0.88     0.88     1.68
 HUB    303.34   256.49    45.25     0.24  3930.16      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.91     1.10     5.53   503.36     1.03   494.06   477.63     2.29
 MEAN     5.84     1.09     5.46   501.44     1.03   492.13   476.60     2.44
 HUB      5.82     1.08     5.39   500.71     1.03   490.23   476.23     2.60

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.21    35.06    31.50     3.56     0.93     0.53     1.40
 MEAN    42.70    27.13    23.50     3.63     0.95     0.51     1.63
 HUB     45.63    10.16     6.50     3.66     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.961       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   364.2392   231.3813   281.3056  1079.1207     0.3375    -0.1098     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8537     5.4154   491.1746   476.8454     2.5287    39.4382    30.6000    -8.8382

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   273.1549    57.9108   266.9456  1084.2319     0.2519     0.3537     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8488     5.5994   495.8401   476.7208   491.5697     0.0224     0.4510

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   282.9497     0.0000   282.9497  1083.7446     0.2611     0.3446     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5665	495.4023	476.7120	0.0000	0.0600	0.0619	0.2712

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8367	5.8330	1.0879	501.8358	13.7135	191.3649	1.4834

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
85332.875	0.515	133.928	258936.109	0.259021E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.491 EfDer = 0.977 SH = 0.281051E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.773	2283.422	5.833	501.836	1.000	1.000	0.980

W Kg/sec = 12.624 Wdry = 27.765 WH2O = 0.008 lbm/sec H2O = 0.138g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.845	2321.472	1.381	0.249	53.357	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54424.145	21789.744	2.706	545.479	201.554	424.468	2.106

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	239.46	-0.08	239.46	0.22	0.43	406.58
MEAN	17.74	0.00	-0.02	239.46	-0.08	239.46	0.22	0.39	
HUB	15.05	0.00	-0.02	239.46	-0.08	239.46	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.09	46.36	12.73	399.93	466.20	5.64	497.23	476.73	2.31
MEAN	55.89	43.40	12.49	353.47	427.01	5.64	497.23	476.73	2.31
HUB	51.40	38.84	12.56	299.90	383.83	5.64	497.23	476.73	2.31

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	333.30	216.30	253.58	1095.96	0.30	2.26	1.98	8.75
MEAN	17.51	335.49	217.47	255.47	1094.17	0.31	2.34	2.07	6.78
HUB	14.85	358.42	249.25	257.57	1092.42	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	394.75	310.07	178.45	0.28	4286.57	0.92	0.89		
MEAN	348.85	287.27	131.38	0.26	3808.53	0.92	0.89	0.89	1.63
HUB	295.91	261.76	46.66	0.24	3702.66	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.37	1.09	5.98	515.56	1.03	506.64	484.02	1.76
MEAN	6.31	1.08	5.91	514.03	1.02	504.99	483.25	1.85
HUB	6.29	1.08	5.85	513.69	1.02	503.37	483.11	1.94

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.46	35.13	31.50	3.63	0.93	0.50	1.40
MEAN	40.41	27.22	23.50	3.72	0.94	0.48	1.62
HUB	44.06	10.27	6.50	3.77	0.94	0.48	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.977	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	360.8957	218.8919	286.9355	1093.0502	0.3302	-0.1190	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3175	5.8639	503.9639	483.4860	1.9177	37.3386	31.5000	-5.8386

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	283.2784	61.7953	276.4561	1097.3966	0.2581	0.2946	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3146	6.0324	507.9809	483.3861	451.3937	0.0170	0.4203

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	287.9428	0.0000	287.9428	1097.1567	0.2624	0.3244	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.0110	507.7667	483.3771	0.0000	0.0600	0.0481	0.2425

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8590	6.3018	1.0804	514.4279	12.5929	198.3307	1.5374

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
78377.758	0.503	123.013	258202.016	0.299532E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.687 EfDer = 0.988 SH = 0.325364E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.773	2283.422	6.302	514.428	1.000	1.000	0.980

W Kg/sec = 12.624 Wdry = 27.764 WH2O = 0.009 lbm/sec H2O = 0.169g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
64.518	2292.884	1.381	0.249	53.359	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51629.563	21789.363	2.718	513.330	188.892	395.845	2.096

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	241.39	-0.08	241.39	0.22	0.41	385.37
MEAN	16.97	0.00	-0.02	241.39	-0.08	241.39	0.22	0.38	
HUB	14.32	0.00	-0.02	241.39	-0.08	241.39	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.84	46.36	11.48	383.79	453.46	6.10	509.75	483.40	1.79
MEAN	54.49	43.80	10.69	338.17	415.55	6.10	509.75	483.40	1.79
HUB	49.78	37.84	11.94	285.35	373.82	6.10	509.75	483.40	1.79

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	321.78	196.66	254.70	1108.15	0.29	2.16	1.89	8.34
MEAN	16.57	324.08	198.21	256.40	1106.56	0.29	2.24	1.97	6.35
HUB	13.89	345.88	230.07	258.27	1104.99	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	376.21	311.63	179.56	0.28	3714.45	0.92	0.90		
MEAN	330.26	288.41	132.06	0.26	3286.45	0.92	0.90	0.90	1.58
HUB	276.78	262.46	46.71	0.24	3196.88	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.79	1.08	6.41	526.32	1.02	518.00	489.35	1.44
MEAN	6.73	1.07	6.35	524.95	1.02	516.51	488.70	1.50
HUB	6.72	1.07	6.29	524.66	1.02	515.05	488.59	1.57

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.67	35.18	31.50	3.68	0.93	0.47	1.40
MEAN	37.71	27.25	23.50	3.75	0.94	0.45	1.62
HUB	41.70	10.25	6.50	3.75	0.94	0.45	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.988	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	344.5717	199.3202	281.0714	1105.7515	0.3116	-0.0951	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7459	6.3123	515.7729	488.8912	1.5400	35.3421	32.4000	-2.9421

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	283.0228	63.4737	275.8134	1109.0706	0.2552	0.2506	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7446	6.4499	518.8756	488.8194	432.2457	0.0132	0.3939

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	280.7107	0.0000	280.7107	1109.1748	0.2531	0.3048	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.4445	518.9802	488.8078	0.0000	0.0600	0.0396	0.2372

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8729	6.7341	1.0686	525.3094	10.8824	215.4838	1.6704

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
67748.234	0.479	106.330	264994.438	0.346497E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.040 EfDer = 0.995 SH = 0.377345E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.773	2283.422	6.734	525.309	1.000	1.000	0.980

W Kg/sec = 12.624 Wdry = 27.763 WH2O = 0.010 lbm/sec H2O = 0.205g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
61.012	2269.011	1.381	0.249	53.361	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49224.090	21788.920	2.853	509.668	178.636	384.739	2.154

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	231.79	-0.08	231.79	0.21	0.39	362.74
MEAN	15.91	0.00	-0.02	231.79	-0.08	231.79	0.21	0.35	
HUB	13.07	0.00	-0.02	231.79	-0.08	231.79	0.21	0.31	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.59	47.36	10.23	365.06	432.49	6.54	520.99	488.83	1.48
MEAN	53.84	44.80	9.04	317.09	392.84	6.54	520.99	488.83	1.48
HUB	48.34	38.84	9.50	260.44	348.71	6.54	520.99	488.83	1.48

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	306.11	183.50	245.01	1119.10	0.27	2.05	1.78	7.43
MEAN	15.50	305.97	181.01	246.69	1117.46	0.27	2.13	1.86	5.75
HUB	12.59	322.64	205.81	248.47	1115.84	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	357.48	300.51	173.99	0.27	3293.38	0.92	0.91		
MEAN	308.81	277.83	127.81	0.25	2806.44	0.92	0.91	0.91	1.56
HUB	250.88	252.53	45.06	0.23	2592.21	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.19	1.07	6.83	535.85	1.02	528.32	493.86	1.23
MEAN	7.12	1.06	6.77	534.29	1.02	526.77	493.15	1.29
HUB	7.09	1.05	6.70	533.61	1.02	525.25	492.85	1.35

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.83	35.38	31.50	3.88	0.93	0.46	1.40
MEAN	36.27	27.39	23.50	3.89	0.93	0.43	1.64
HUB	39.64	10.28	6.50	3.78	0.93	0.42	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	335.7235	184.3259	280.5962	1116.1302	0.3008	-0.1775	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.1278	6.6997	525.5311	493.3092	1.3414	33.3012	33.0000	-0.3012

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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   287.4154    65.6316   279.8216  1118.6934     0.2569     0.1244     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     7.1264     6.8109   527.9484   493.2528   410.5396     0.0236     0.3657

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   279.6118     0.0000   279.6118  1119.0631     0.2499     0.2878     0.5109

Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     6.8229   528.3036   493.2493     0.0000     0.0600     0.0366     0.1569

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.8807     7.1216     1.0575   534.5817     9.2731   237.1873     1.8387

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57745.070       0.452      90.630  278613.563   0.401814E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1345   Tt4 =   534.5817   T1  =   471.2078

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    394431.81    619.0540     80.5881      1.4749      0.8412     15.3875      1.1345     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 30029 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =13.922   EfDer =  0.967    SH =  0.252956E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     31.662    2156.069       5.592     480.736       1.000       1.000       0.980
  W Kg/sec =  14.392  Wdry =  31.654  WH2O = 0.008  lbm/sec   H2O =   0.126g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.125    2239.577       1.381       0.249      53.356      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  61352.113   24841.418       3.545     831.557     234.573     619.754       2.642

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   177.07    -0.06   177.07     0.17     0.40   403.18
 MEAN    17.06     0.00    -0.02   177.07    -0.06   177.07     0.17     0.34
 HUB     12.51     0.00    -0.02   177.07    -0.06   177.07     0.17     0.28

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.48    50.47    15.01   388.16   426.70      5.49   478.22   465.35     4.41
 MEAN    61.12    47.20    13.92   320.99   366.64      5.49   478.22   465.35     4.41
 HUB     53.05    38.62    14.43   235.38   294.59      5.49   478.22   465.35     4.41

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   352.86   258.83   239.83  1074.40      0.33     7.29     6.52    16.04
 MEAN    18.04   359.71   265.99   242.15  1072.15      0.34     7.43     6.80    12.53
 HUB     15.00   392.83   306.68   245.47  1069.27      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    388.16   272.48   129.33     0.25  5340.95      0.92     0.88
 MEAN   339.35   253.02    73.36     0.24  4798.44      0.92     0.88     0.88     1.66
 HUB    282.23   246.69    24.45     0.23  4601.00      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.22     1.11     5.78   496.89     1.03   486.88   475.31     3.57
 MEAN     6.15     1.10     5.70   495.25     1.03   484.85   474.39     3.83
 HUB      6.13     1.10     5.59   494.65     1.03   482.25   474.12     4.19

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     47.18    28.34    24.20     4.14     0.93     0.53     1.80
 MEAN    47.69    16.85    12.70     4.15     0.95     0.48     2.22
 HUB     51.33    -5.69    -9.30     3.61     0.95     0.35     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.967       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   371.3320   265.4731   259.6372  1071.7732     0.3465    -0.0422     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.1620     5.6771   484.5144   474.6158     3.9139    45.6367    35.4000   -10.2367

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   260.2864    63.6740   252.3779  1077.9845     0.2415     0.4696     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.1543     5.9128   490.1504   474.4316   554.9116     0.0259     0.5586

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   258.8356     0.0000   258.8356  1078.0403     0.2401     0.4499     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.8953   490.2108   474.4204     0.0000     0.0600     0.0698     0.4329
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8349     6.1333     1.0968   495.5938    14.8588   175.6454     1.3616

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  92468.031       0.614     165.450  319237.875   0.296948E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =12.862   EfDer =  0.975    SH =  0.340708E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.662    2156.069       6.133     495.594       1.000       1.000       0.980
 W Kg/sec =  14.392  Wdry =  31.652  WH2O = 0.011  lbm/sec   H2O =   0.178g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     74.177    2205.758       1.381       0.249      53.359      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58261.898   24840.563       2.719     590.487     217.173     468.502       2.157

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   236.80    -0.08   236.80     0.22     0.42   395.55
 MEAN    18.08     0.00    -0.02   236.80    -0.08   236.80     0.22     0.38
 HUB     15.21     0.00    -0.02   236.80    -0.08   236.80     0.22     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.52    46.36    12.16   386.65   453.47     5.93   491.09   474.52     3.76
 MEAN    55.16    42.30    12.86   340.15   414.52     5.93   491.09   474.52     3.76
 HUB     50.40    37.84    12.56   286.18   371.51     5.93   491.09   474.52     3.76

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   326.68   207.39   252.41  1088.55      0.30     2.33     2.04     9.02
 MEAN    18.01   328.99   208.85   254.20  1086.86      0.30     2.40     2.13     7.35
 HUB     15.22   351.55   240.72   256.20  1085.19      0.32     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    384.21   308.18   176.81     0.28  4236.64      0.92     0.89
 MEAN   338.86   285.52   130.02     0.26  3762.78      0.92     0.89     0.89     1.59
 HUB    286.42   260.25    45.71     0.24  3665.71      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.66     1.09     6.26   508.40     1.03   499.83   481.73     2.87
 MEAN     6.60     1.08     6.20   506.97     1.02   498.27   480.97     3.02
 HUB      6.59     1.07     6.13   506.68     1.02   496.75   480.86     3.17

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.41    35.01    31.50     3.51     0.93     0.48     1.40
 MEAN    39.41    27.09    23.50     3.59     0.94     0.47     1.63
 HUB     43.22    10.11     6.50     3.61     0.94     0.46     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.975       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   354.4812   209.4322   285.9984  1085.7366     0.3265    -0.1230     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6127     6.1480   497.2542   481.2200     3.1318    36.2147    30.6000    -5.6147

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   278.8639    59.1211   272.5247  1089.9274     0.2559     0.2898     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6100     6.3196   501.1013   481.0921   491.5697     0.0165     0.3976

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   288.6503     0.0000   288.6503  1089.4342     0.2650     0.2991     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.2870	500.6551	481.0949	0.0000	0.0600	0.0472	0.2119

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8563	6.5971	1.0756	507.3477	11.7546	204.0037	1.5814

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
73174.367	0.496	130.929	291925.313	0.357371E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =10.414 EfDer = 0.989 SH = 0.379174E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.662	2156.069	6.597	507.348	1.000	1.000	0.980

W Kg/sec = 14.392 Wdry = 31.650 WH2O = 0.012 lbm/sec H2O = 0.208g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.775	2180.057	1.381	0.249	53.361	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55503.820	24840.188	2.670	545.479	204.293	424.468	2.078

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	244.21	-0.08	244.21	0.22	0.41	381.81
MEAN	17.74	0.00	-0.02	244.21	-0.08	244.21	0.22	0.38	
HUB	15.05	0.00	-0.02	244.21	-0.08	244.21	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.12	46.36	10.76	377.62	449.78	6.37	502.56	481.09	2.86
MEAN	53.81	43.40	10.41	333.75	413.62	6.37	502.56	481.09	2.86
HUB	49.23	38.84	10.39	283.17	373.99	6.37	502.56	481.09	2.86

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	322.00	189.77	260.14	1099.96	0.29	2.26	1.98	8.75
MEAN	17.51	326.27	194.89	261.67	1098.59	0.30	2.34	2.07	6.78
HUB	14.85	350.80	231.72	263.37	1097.25	0.32	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	372.73	318.03	182.96	0.29	3761.06	0.92	0.91		
MEAN	329.39	294.21	134.50	0.27	3413.31	0.92	0.91	0.91	1.53
HUB	279.41	267.66	47.69	0.24	3442.25	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.10	1.08	6.69	518.71	1.02	510.39	487.12	2.29
MEAN	7.05	1.07	6.64	517.66	1.02	509.11	486.60	2.38
HUB	7.05	1.07	6.58	517.75	1.02	507.87	486.69	2.47

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.11	35.12	31.50	3.62	0.93	0.44	1.40
MEAN	36.68	27.20	23.50	3.70	0.94	0.43	1.62
HUB	41.34	10.26	6.50	3.76	0.94	0.44	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.989	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	353.4229	196.1670	293.9834	1097.3906	0.3221	-0.1336	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.0610	6.5776	508.0116	486.8365	2.4650	33.7141	31.5000	-2.2141

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	291.4090	63.5689	284.3909	1100.8534	0.2647	0.2185	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.0596	6.7283	511.2231	486.7365	451.3937	0.0132	0.3619

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	296.0705	0.0000	296.0705	1100.6094	0.2690	0.2688	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7076	511.0031	486.7349	0.0000	0.0600	0.0383	0.1704

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8741	7.0488	1.0685	518.0428	10.6957	213.6908	1.6565

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
66596.984	0.479	119.160	292183.750	0.396996E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.364 EfDer = 0.998 SH = 0.421408E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.662	2156.069	7.049	518.043	1.000	1.000	0.980

W Kg/sec = 14.392 Wdry = 31.649 WH2O = 0.013 lbm/sec H2O = 0.242g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.989	2157.436	1.381	0.249	53.362	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53058.012	24839.775	2.657	513.330	193.216	395.845	2.049

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	248.06	-0.09	248.06	0.22	0.40	362.60
MEAN	16.97	0.00	-0.02	248.06	-0.09	248.06	0.22	0.37	
HUB	14.32	0.00	-0.02	248.06	-0.09	248.06	0.22	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.61	46.36	9.25	362.38	439.22	6.81	513.10	486.73	2.28
MEAN	52.16	43.80	8.36	319.31	404.41	6.81	513.10	486.73	2.28
HUB	47.37	37.84	9.53	269.43	366.30	6.81	513.10	486.73	2.28

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	313.12	169.52	263.27	1110.08	0.28	2.16	1.89	8.34
MEAN	16.57	317.49	175.46	264.61	1108.90	0.29	2.24	1.97	6.35
HUB	13.89	340.87	213.04	266.09	1107.74	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	355.23	322.18	185.71	0.29	3202.14	0.92	0.91		
MEAN	311.84	297.69	136.38	0.27	2909.48	0.92	0.91	0.91	1.48
HUB	261.34	270.43	48.30	0.24	2960.39	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.49	1.06	7.10	527.72	1.02	519.85	491.62	1.91
MEAN	7.45	1.06	7.05	526.83	1.02	518.74	491.20	1.97
HUB	7.46	1.06	6.99	526.99	1.02	517.66	491.31	2.03

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.78	35.20	31.50	3.70	0.93	0.40	1.40
MEAN	33.55	27.27	23.50	3.77	0.93	0.40	1.62
HUB	38.68	10.29	6.50	3.79	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.998	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	339.6028	176.4451	290.1675	1108.0128	0.3065	-0.1078	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.4649	7.0001	517.9197	491.3979	2.0262	31.3030	32.4000	1.0970

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	293.2854	65.7753	285.8145	1110.5267	0.2641	0.1660	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.4640	7.1153	520.2734	491.3289	432.2457	0.0122	0.3309

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	290.8304	0.0000	290.8304	1110.6438	0.2619	0.2385	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.1110	520.3885	491.3173	0.0000	0.0600	0.0370	0.1558

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8793	7.4534	1.0574	527.1797	9.1375	235.0787	1.8223

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
56907.566	0.451	101.823	300898.750	0.440848E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 6.496 EfDer = 1.000 SH = 0.468809E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.662	2156.069	7.453	527.180	1.000	1.000	0.980

W Kg/sec = 14.392 Wdry = 31.648 WH2O = 0.015 lbm/sec H2O = 0.281g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.955	2138.658	1.381	0.249	53.363	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50960.211	24839.313	2.765	509.668	184.338	384.739	2.087

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	239.97	-0.08	239.97	0.22	0.38	341.90
MEAN	15.91	0.00	-0.02	239.97	-0.08	239.97	0.22	0.34	
HUB	13.07	0.00	-0.02	239.97	-0.08	239.97	0.22	0.31	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.16	47.36	7.80	344.70	420.07	7.22	522.56	491.32	1.92
MEAN	51.30	44.80	6.50	299.41	383.77	7.22	522.56	491.32	1.92
HUB	45.71	38.84	6.87	245.92	343.66	7.22	522.56	491.32	1.92

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	299.09	156.14	255.10	1119.22	0.27	2.05	1.78	7.43
MEAN	15.50	301.45	158.50	256.42	1117.99	0.27	2.13	1.86	5.75
HUB	12.59	320.21	189.86	257.85	1116.79	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	337.55	313.02	181.41	0.28	2802.67	0.92	0.91		
MEAN	291.59	288.90	133.09	0.26	2457.63	0.92	0.91	0.91	1.46
HUB	236.88	262.10	47.03	0.23	2391.40	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.86	1.05	7.48	535.65	1.02	528.46	495.43	1.66
MEAN	7.81	1.05	7.43	534.60	1.01	527.31	494.95	1.71
HUB	7.80	1.05	7.37	534.40	1.01	526.17	494.88	1.77

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	31.47	35.42	31.50	3.92	0.93	0.39	1.40
MEAN	31.72	27.43	23.50	3.93	0.93	0.37	1.64
HUB	36.37	10.34	6.50	3.84	0.93	0.37	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	1.000	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	333.4774	161.4028	291.8156	1116.5494	0.2987	-0.1964	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.8135	7.3507	525.9575	495.1151	1.7831	28.9469	33.0000	4.0531

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   300.0257    68.5111   292.0987  1118.3541     0.2683     0.0186     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.8107     7.4346   527.6586   495.0622   410.5396     0.0270     0.2999

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   291.8581     0.0000   291.8581  1118.7605     0.2609     0.2120     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.4488   528.0466   495.0525     0.0000     0.0600     0.0422     0.0545

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8742     7.8047     1.0471   534.8843     7.7051   261.7662     2.0292

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  47997.977       0.421      85.881  317274.844   0.490530E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1126   Tt4 =   534.8843   T1  =   480.7357

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    337144.94    603.2435     80.1248      1.3956      0.8547     13.9217      1.1126     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 25666 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.173   EfDer =  0.995    SH =  0.394919E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     39.679    1971.979       6.513     491.411       1.000       1.000       0.980
  W Kg/sec =  18.036  Wdry =  39.663  WH2O = 0.016  lbm/sec   H2O =   0.223g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     87.171    2025.989       1.381       0.249      53.361      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  67668.234   31129.043       3.258     831.557     255.229     619.754       2.428

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   195.30    -0.07   195.30     0.18     0.38   364.73
 MEAN    17.06     0.00    -0.02   195.30    -0.07   195.30     0.18     0.33
 HUB     12.51     0.00    -0.02   195.30    -0.07   195.30     0.18     0.27

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     61.19    50.47    10.72   355.02   405.25     6.37   488.35   473.18     5.23
 MEAN    56.37    47.20     9.17   293.58   352.67     6.37   488.35   473.18     5.23
 HUB     47.79    38.62     9.17   215.28   290.72     6.37   488.35   473.18     5.23

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   340.74   211.36   267.27  1082.33      0.31     7.29     6.52    16.04
 MEAN    18.04   353.47   229.22   269.07  1080.86      0.33     7.43     6.80    12.53
 HUB     15.00   394.39   285.49   272.10  1078.61      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    355.02   303.43   143.66     0.28  4361.78      0.92     0.91
 MEAN   310.38   281.04    81.16     0.26  4135.32      0.92     0.91     0.91     1.42
 HUB    258.13   273.47    27.36     0.25  4283.16      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.06     1.08     6.59   503.47     1.02   494.14   480.47     4.57
 MEAN     7.03     1.08     6.53   502.84     1.02   492.81   480.15     4.78
 HUB      7.05     1.08     6.43   503.25     1.02   490.76   480.50     5.11

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.34    28.26    24.20     4.06     0.93     0.40     1.80
 MEAN    40.43    16.79    12.70     4.09     0.93     0.35     2.22
 HUB     46.38    -5.74    -9.30     3.56     0.93     0.23     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.995       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   368.3911   228.7721   288.7479  1080.2843     0.3410    -0.0596     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     7.0376     6.5004   492.2885   480.3896     4.8996    38.3894    35.4000    -2.9894

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   291.7550    71.3722   282.8904  1084.7297     0.2690     0.3356     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     7.0353     6.6948   496.3515   480.2141   554.9116     0.0145     0.4358

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   289.6225     0.0000   289.6225  1084.8303     0.2670     0.3476     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     6.6871   496.4511   480.2142     0.0000     0.0600     0.0397     0.3209
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8755     7.0221     1.0782   503.1871    11.7761   200.7722     1.5564

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  73326.125       0.582     164.418  394567.313   0.438348E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.321   EfDer =  0.999    SH =  0.478142E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     39.679    1971.979       7.022     503.187       1.000       1.000       0.980
 W Kg/sec =  18.036  Wdry =  39.660  WH2O = 0.019  lbm/sec   H2O =   0.281g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     81.812    2002.145       1.381       0.249      53.364      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  65114.793   31128.029       2.465     590.487     239.550     468.502       1.956

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   264.65    -0.09   264.65     0.24     0.41   359.04
 MEAN    18.08     0.00    -0.02   264.65    -0.09   264.65     0.24     0.38
 HUB     15.21     0.00    -0.02   264.65    -0.09   264.65     0.24     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.20     46.36     6.84   353.64   441.78     6.74   497.56   480.28     4.63
 MEAN    49.62     42.30     7.32   311.10   408.52     6.74   497.56   480.28     4.63
 HUB     44.69     37.84     6.85   261.75   372.29     6.74   497.56   480.28     4.63

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   322.94   151.38   285.26  1092.34     0.30     2.33     2.04     9.02
 MEAN    18.01   329.60   163.24   286.33  1091.51     0.30     2.40     2.13     7.35
 HUB     15.22   356.30   210.36   287.58  1090.70     0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    351.40   348.40   200.02     0.32  3093.15     0.92     0.91
 MEAN   309.93   321.72   146.69     0.29  2941.59     0.92     0.91     0.91     1.38
 HUB    261.97   292.17    51.61     0.27  3203.66     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.43     1.06     6.99   511.73     1.02   503.36   485.06     3.89
 MEAN     7.41     1.05     6.96   511.32     1.02   502.59   484.86     3.99
 HUB      7.44     1.06     6.92   512.04     1.02   501.85   485.31     4.08

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     27.95    35.04    31.50     3.54     0.93     0.33     1.40
 MEAN    29.69    27.13    23.50     3.63     0.93     0.34     1.63
 HUB     36.18    10.17     6.50     3.67     0.93     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.999       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   361.9185   163.6983   322.7815  1089.9659     0.3320    -0.1638     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.4194     6.8811   501.1804   485.1365     4.1794    26.8918    30.6000     3.7082

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   317.0435    67.2155   309.8365  1092.6239     0.2902     0.0965     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4172     7.0016   503.6266   485.0248   491.5697     0.0147     0.2551

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   328.3152     0.0000   328.3152  1091.9851     0.3007     0.1476     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9605	503.0426	485.0411	0.0000	0.0600	0.0413	0.0086

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8714	7.4048	1.0545	511.6965	8.5098	251.2283	1.9475

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
53003.070	0.429	118.848	363729.719	0.492958E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.396 EfDer = 0.995 SH = 0.511833E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.679	1971.979	7.405	511.696	1.000	1.000	0.980

W Kg/sec = 18.036 Wdry = 39.658 WH2O = 0.020 lbm/sec H2O = 0.311g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.237	1985.428	1.381	0.249	53.365	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62938.246	31127.615	2.381	545.479	229.090	424.468	1.853

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	276.92	-0.10	276.92	0.25	0.40	347.73
MEAN	17.74	0.00	-0.02	276.92	-0.10	276.92	0.25	0.38	
HUB	15.05	0.00	-0.02	276.92	-0.10	276.92	0.25	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.29	46.36	4.93	345.38	442.76	7.09	505.54	484.98	3.83
MEAN	47.80	43.40	4.40	305.26	412.22	7.09	505.54	484.98	3.83
HUB	43.09	38.84	4.25	258.99	379.22	7.09	505.54	484.98	3.83

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	325.88	129.98	298.83	1099.82	0.30	2.26	1.98	8.75
MEAN	17.51	333.43	146.57	299.48	1099.36	0.30	2.34	2.07	6.78
HUB	14.85	361.09	200.48	300.32	1098.92	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	340.91	365.78	210.93	0.33	2576.75	0.92	0.91		
MEAN	301.27	337.08	154.69	0.31	2567.67	0.92	0.91	0.91	1.32
HUB	255.55	305.33	55.07	0.28	2978.60	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.75	1.05	7.30	518.82	1.01	510.29	488.80	3.35
MEAN	7.75	1.05	7.28	518.79	1.01	509.87	488.81	3.39
HUB	7.81	1.05	7.25	519.93	1.02	509.46	489.45	3.43

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	23.51	35.22	31.50	3.72	0.93	0.28	1.40
MEAN	26.08	27.32	23.50	3.82	0.92	0.29	1.62
HUB	33.73	10.39	6.50	3.89	0.92	0.33	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	368.1359	147.5341	337.2799	1097.6588	0.3354	-0.1766	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.7635	7.1894	508.2985	489.0867	3.5619	23.6257	31.5000	7.8743

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	336.9844	73.5109	328.8688	1099.5629	0.3065	0.0007	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.7583	7.2755	510.0616	489.0021	451.3937	0.0205	0.2129

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	342.8217	0.0000	342.8217	1099.2157	0.3119	0.0918	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.2421	509.7431	488.9945	0.0000	0.0600	0.0570	-0.0668

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8408	7.7403	1.0453	519.1772	7.4810	272.0184	2.1087

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
46603.504	0.401	104.498	366373.344	0.526634E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 1.799 EfDer = 0.974 SH = 0.546503E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.679	1971.979	7.740	519.177	1.000	1.000	0.980

W Kg/sec = 18.036 Wdry = 39.657 WH2O = 0.022 lbm/sec H2O = 0.341g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
75.390	1971.072	1.381	0.249	53.366	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
61193.102	31127.193	2.325	513.330	220.761	395.845	1.793

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	286.10	-0.10	286.10	0.26	0.40	331.28
MEAN	16.97	0.00	-0.02	286.10	-0.10	286.10	0.26	0.37	
HUB	14.32	0.00	-0.02	286.10	-0.10	286.10	0.26	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.21	46.36	2.85	331.44	437.92	7.39	512.61	488.92	3.28
MEAN	45.60	43.80	1.80	292.04	408.90	7.39	512.61	488.92	3.28
HUB	40.75	37.84	2.91	246.43	377.66	7.39	512.61	488.92	3.28

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	325.87	106.43	308.00	1106.16	0.29	2.16	1.89	8.34
MEAN	16.57	332.75	125.12	308.33	1105.96	0.30	2.24	1.97	6.35
HUB	13.89	358.50	181.95	308.90	1105.77	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	324.90	377.62	218.47	0.34	2011.27	0.92	0.89		
MEAN	285.22	347.42	160.09	0.31	2075.45	0.92	0.89	0.89	1.26
HUB	239.03	314.13	57.08	0.28	2528.70	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.01	1.04	7.55	524.73	1.01	516.21	491.80	2.97
MEAN	8.02	1.04	7.54	524.91	1.01	516.02	491.90	2.99
HUB	8.08	1.04	7.52	526.16	1.01	515.85	492.58	3.00

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	19.06	35.35	31.50	3.85	0.93	0.22	1.40
MEAN	22.09	27.44	23.50	3.94	0.91	0.24	1.62
HUB	30.50	10.47	6.50	3.97	0.91	0.29	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.974	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	361.4981	125.8272	338.8929	1104.6166	0.3273	-0.1442	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0331	7.4662	514.7802	492.1421	3.1066	20.3694	32.4000	12.0306

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	345.3789	77.4584	336.5810	1105.5992	0.3124	-0.0616	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.0238	7.5058	515.6945	492.0886	432.2457	0.0284	0.1764

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	343.1112	0.0000	343.1112	1105.7314	0.3103	0.0380	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.4878	515.8198	492.0448	0.0000	0.0600	0.0809	-0.0976

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7713	7.9975	1.0332	525.2684	6.0916	312.8703	2.4254

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
37953.840	0.360	85.103	379626.594	0.561437E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-0.608 EfDer = 0.940 SH = 0.582993E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.679	1971.979	7.998	525.268	1.000	1.000	0.980

W Kg/sec = 18.036 Wdry = 39.656 WH2O = 0.023 lbm/sec H2O = 0.372g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
73.393	1959.610	1.380	0.249	53.367	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
59838.434	31126.746	2.371	509.668	214.918	384.739	1.790

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	281.78	-0.10	281.78	0.25	0.38	313.28
MEAN	15.91	0.00	-0.02	281.78	-0.10	281.78	0.25	0.35	
HUB	13.07	0.00	-0.02	281.78	-0.10	281.78	0.25	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	48.22	47.36	0.86	315.26	422.91	7.65	518.90	491.97	2.88
MEAN	44.19	44.80	-0.61	273.84	392.99	7.65	518.90	491.97	2.88
HUB	38.61	38.84	-0.23	224.92	360.60	7.65	518.90	491.97	2.88

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	317.33	90.95	304.01	1112.00	0.29	2.05	1.78	7.43
MEAN	15.50	322.68	107.27	304.33	1111.80	0.29	2.13	1.86	5.75
HUB	12.59	344.24	159.80	304.90	1111.60	0.31	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	308.73	373.96	217.77	0.34	1633.49	0.92	0.86		
MEAN	266.69	343.56	159.43	0.31	1663.92	0.92	0.86	0.86	1.23
HUB	216.66	310.16	56.86	0.28	2013.11	0.92	0.86		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.21	1.03	7.77	529.78	1.01	521.70	494.23	2.68
MEAN	8.22	1.03	7.76	529.86	1.01	521.51	494.28	2.70
HUB	8.26	1.03	7.74	530.83	1.01	521.32	494.79	2.71

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	16.66	35.61	31.50	4.11	0.93	0.19	1.40
MEAN	19.42	27.65	23.50	4.15	0.90	0.21	1.64
HUB	27.66	10.56	6.50	4.06	0.90	0.25	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.940	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	364.3662	109.2335	347.6073	1109.6553	0.3284	-0.2487	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2228	7.6388	519.5035	494.5084	2.8599	17.4450	33.0000	15.5550

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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   361.0741    82.4516   351.5341  1109.8638     0.3253    -0.2725     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     8.1973     7.6254   519.6949   494.4554   410.5396     0.0734     0.1443

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   351.2930     0.0000   351.2930  1110.4604     0.3163     0.0044     0.5109

Blockage4   Ps4       Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     7.6414   520.2540   494.4146     0.0000     0.0600     0.1043    -0.2389

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4       Tt2avg      Del T     Ns          Ns nondim
 0.6795     8.1826     1.0231   530.1571     4.8891   364.8164     2.8280

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  30466.850       0.320      68.315  402282.625   0.598936E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0788   Tt4 =   530.1571   T1  =   491.4115

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    241353.39    541.1817     87.1710      1.2564      0.8236      9.1730      1.0788     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 20047 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.590   EfDer =  0.999    SH =  0.688537E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     48.713    1794.313       7.939     506.409       1.000       1.000       0.980
  W Kg/sec =  22.142  Wdry =  48.680  WH2O = 0.034  lbm/sec   H2O =   0.460g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     89.122    1815.957       1.380       0.249      53.371      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  70298.039   38212.375       3.186     831.557     260.997     619.754       2.375

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   202.89    -0.07   202.89     0.19     0.35   326.92
 MEAN    17.06     0.00    -0.02   202.89    -0.07   202.89     0.19     0.31
 HUB     12.51     0.00    -0.02   202.89    -0.07   202.89     0.19     0.26

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.87    50.47     7.40   323.03   381.52     7.75   503.11   483.83     6.18
 MEAN    52.79    47.20     5.59   267.13   335.50     7.75   503.11   483.83     6.18
 HUB     44.00    38.62     5.38   195.89   282.07     7.75   503.11   483.83     6.18

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.04   172.01   280.50  1095.83      0.30     7.29     6.52    16.04
 MEAN    18.04   343.81   197.20   281.64  1094.99      0.31     7.43     6.80    12.53
 HUB     15.00   387.30   263.22   284.12  1093.29      0.35     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    323.03   318.57   151.02     0.29  3549.96      0.92     0.91
 MEAN   282.41   294.25    85.22     0.27  3557.83      0.92     0.91     0.91     1.27
 HUB    234.87   285.53    28.34     0.26  3949.12      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.41     1.06     7.91   515.33     1.02   506.64   489.05     5.75
 MEAN     8.41     1.06     7.87   515.35     1.02   505.86   489.11     5.89
 HUB      8.47     1.07     7.77   516.33     1.02   504.30   489.80     6.17

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.52    28.30    24.20     4.10     0.93     0.29     1.80
 MEAN    35.00    16.83    12.70     4.13     0.92     0.26     2.22
 HUB     42.81    -5.70    -9.30     3.60     0.92     0.15     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   360.7892   196.8131   302.3797  1094.2927     0.3297    -0.0736     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     8.4253     7.8224   505.2271   489.3439     6.0307    33.0593    35.4000     2.3407

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   307.5804    75.2435   298.2350  1097.3756     0.2803     0.2283     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     8.4232     7.9819   508.0801   489.1663   554.9116     0.0136     0.3489

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   305.2665     0.0000   305.2665  1097.4921     0.2781     0.2526     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     7.9747   508.1939   489.1609     0.0000     0.0600     0.0385     0.2158
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8729     8.4087     1.0592   515.6691     9.2599   222.7984     1.7271

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57722.855       0.553     158.901  474058.188   0.734674E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.146   EfDer =  0.987    SH =  0.774873E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     48.713    1794.313       8.409     515.669       1.000       1.000       0.980
 W Kg/sec =  22.142  Wdry =  48.675  WH2O = 0.038  lbm/sec   H2O =   0.530g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     84.910    1799.578       1.380       0.249      53.373      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68595.227   38211.082       2.375     590.487     248.674     468.502       1.884

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   278.80    -0.10   278.80     0.25     0.39   322.71
 MEAN    18.08     0.00    -0.02   278.80    -0.10   278.80     0.25     0.36
 HUB     15.21     0.00    -0.02   278.80    -0.10   278.80     0.25     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.10     46.36     2.74   321.78   425.83     8.05   509.43   489.19     5.68
 MEAN    45.45     42.30     3.15   283.08   397.39     8.05   509.43   489.19     5.68
 HUB     40.52     37.84     2.68   238.16   366.74     8.05   509.43   489.19     5.68

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   321.94   105.88   304.03  1102.43      0.29     2.33     2.04     9.02
 MEAN    18.01   329.14   125.46   304.29  1102.29      0.30     2.40     2.13     7.35
 HUB     15.22   355.49   183.04   304.75  1102.16      0.32     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    319.74   371.72   213.87     0.34  2163.94      0.92     0.90
 MEAN   282.01   342.19   156.54     0.31  2261.31      0.92     0.90     0.90     1.25
 HUB    238.37   309.73    55.33     0.28  2787.88      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.70     1.03     8.21   521.10     1.01   512.79   492.15     5.17
 MEAN     8.72     1.04     8.20   521.35     1.01   512.66   492.29     5.19
 HUB      8.79     1.05     8.19   522.67     1.01   512.54   493.06     5.20

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     19.20    35.12    31.50     3.62     0.93     0.22     1.40
 MEAN    22.41    27.22    23.50     3.72     0.91     0.24     1.63
 HUB     30.99    10.29     6.50     3.79     0.91     0.28     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.987       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   365.7633   125.8148   343.4434  1100.4768     0.3324    -0.1937     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.7307     8.0963   510.9787   492.6060     5.4631    20.1195    30.6000    10.4805

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   339.2822    71.9302   331.5697  1102.0911     0.3079    -0.0439     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.7224     8.1750   512.4758   492.4968   491.5697     0.0254     0.1611

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   351.9464     0.0000   351.9464  1101.3326     0.3196     0.0238     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1114	511.7739	492.5134	0.0000	0.0600	0.0713	-0.1622

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7986	8.6978	1.0344	521.7078	6.0389	303.2032	2.3504

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
37654.613	0.368	103.656	439598.813	0.789535E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =-0.241 EfDer = 0.946 SH = 0.808111E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
48.713	1794.313	8.698	521.708	1.000	1.000	0.980

W Kg/sec = 22.142 Wdry = 48.674 WH2O = 0.039 lbm/sec H2O = 0.563g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
82.568	1789.133	1.380	0.249	53.375	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
67346.086	38210.586	2.256	545.479	241.822	424.468	1.755

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	296.31	-0.10	296.31	0.27	0.39	313.35
MEAN	17.74	0.00	-0.02	296.31	-0.10	296.31	0.27	0.37	
HUB	15.05	0.00	-0.02	296.31	-0.10	296.31	0.27	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	46.69	46.36	0.33	314.26	432.00	8.28	514.67	492.38	5.03
MEAN	43.16	43.40	-0.24	277.76	406.21	8.28	514.67	492.38	5.03
HUB	38.51	38.84	-0.33	235.66	378.66	8.28	514.67	492.38	5.03

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	333.81	80.55	323.95	1106.70	0.30	2.26	1.98	8.75
MEAN	17.51	340.57	105.96	323.67	1107.01	0.31	2.34	2.07	6.78
HUB	14.85	366.71	172.27	323.73	1107.31	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	310.19	397.09	229.64	0.36	1597.71	0.92	0.87		
MEAN	274.12	364.75	168.17	0.33	1856.72	0.92	0.87	0.87	1.19
HUB	232.53	329.29	60.25	0.30	2559.77	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.91	1.02	8.37	525.72	1.01	516.78	494.51	4.75
MEAN	8.94	1.03	8.38	526.37	1.01	517.07	494.85	4.71
HUB	9.04	1.04	8.39	528.14	1.01	517.35	495.81	4.66

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	13.96	35.33	31.50	3.83	0.93	0.15	1.40
MEAN	18.13	27.45	23.50	3.95	0.90	0.18	1.62
HUB	28.02	10.54	6.50	4.04	0.90	0.25	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.946	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	380.4621	106.6506	365.2083	1104.9287	0.3443	-0.2081	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.9588	8.2625	515.1348	495.1776	4.9886	16.2792	31.5000	15.2208

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	367.1439	80.0900	358.3019	1105.7891	0.3320	-0.1489	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.9426	8.2941	515.9330	495.1003	451.3937	0.0377	0.1167

```
    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   374.4215     0.0000   374.4215  1105.3236     0.3387    -0.0407     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2341   515.5003   495.0758     0.0000     0.0600     0.1021    -0.2517

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6744     8.9051     1.0238   526.7420     5.0344   344.3147     2.6691

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  31395.598       0.326      86.426  445163.406   0.822079E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =-3.329   EfDer =  0.887    SH =  0.840718E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     48.713    1794.313       8.905     526.742       1.000       1.000       0.980
 W Kg/sec =  22.142  Wdry =  48.672  WH2O = 0.041  lbm/sec   H2O =   0.592g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     81.034    1780.563       1.380       0.249      53.376      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66642.461   38210.090       2.163     513.330     237.335     395.845       1.668

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   311.58    -0.11   311.58     0.28     0.39   299.26
 MEAN    16.97     0.00    -0.02   311.58    -0.11   311.58     0.28     0.37
 HUB     14.32     0.00    -0.02   311.58    -0.11   311.58     0.28     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     44.08    46.36    -2.28   301.58   433.70     8.44   518.96   494.90     4.57
 MEAN    40.47    43.80    -3.33   265.73   409.57     8.44   518.96   494.90     4.57
 HUB     35.75    37.84    -2.09   224.23   383.93     8.44   518.96   494.90     4.57

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   344.08    53.31   339.93  1109.89     0.31     2.16     1.89     8.34
 MEAN    16.57   349.07    82.20   339.26  1110.55     0.31     2.24     1.97     6.35
 HUB     13.89   372.35   153.85   339.08  1111.19     0.34     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    295.63   417.46   242.32     0.38  1008.49     0.92     0.81
 MEAN   259.52   382.80   177.32     0.34  1364.19     0.92     0.81     0.81     1.14
 HUB    217.49   345.00    63.65     0.31  2138.45     0.92     0.81

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.03     1.01     8.46   529.27     1.00   519.78   496.24     4.48
 MEAN     9.08     1.02     8.48   530.17     1.01   520.40   496.68     4.40
 HUB      9.18     1.03     8.50   532.11     1.01   521.00   497.68     4.31

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      8.91    35.48    31.50     3.98     0.93     0.08     1.40
 MEAN    13.62    27.59    23.50     4.09     0.89     0.13     1.62
 HUB     24.40    10.63     6.50     4.13     0.89     0.20     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.887       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   382.7030    82.6618   373.6691  1108.8140     0.3451    -0.1708     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.0886     8.3791   518.7747   496.9691     4.6124    12.4739    32.4000    19.9261

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   383.2201    85.9451   373.4583  1108.7844     0.3456    -0.2025     2.2705
```

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.0650	8.3554	518.7427	496.9339	432.2457	0.0484	0.0806

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	381.6469	0.0000	381.6469	1108.8878	0.3442	-0.0913	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.3143	518.8391	496.8490	0.0000	0.0600	0.1310	-0.2694

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.4690	9.0142	1.0123	530.5175	3.7757	424.9605	3.2943

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
23548.902	0.269	64.826	463782.625	0.854072E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-6.195 EfDer = 0.824 SH = 0.873315E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
48.713	1794.313	9.014	530.517	1.000	1.000	0.980

W Kg/sec = 22.142 Wdry = 48.671 WH2O = 0.043 lbm/sec H2O = 0.618g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
80.339	1774.216	1.380	0.249	53.377	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
66300.391	38209.602	2.166	509.668	235.305	384.739	1.635

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	312.20	-0.11	312.20	0.28	0.38	283.64
MEAN	15.91	0.00	-0.02	312.20	-0.11	312.20	0.28	0.36	
HUB	13.07	0.00	-0.02	312.20	-0.11	312.20	0.28	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	42.59	47.36	-4.77	286.86	424.05	8.54	522.70	496.65	4.21
MEAN	38.61	44.80	-6.19	249.17	399.51	8.54	522.70	496.65	4.21
HUB	33.26	38.84	-5.58	204.65	373.36	8.54	522.70	496.65	4.21

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	342.94	35.23	341.12	1112.97	0.31	2.05	1.78	7.43
MEAN	15.50	346.24	63.06	340.44	1113.70	0.31	2.13	1.86	5.75
HUB	12.59	365.23	132.60	340.31	1114.40	0.33	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	280.91	420.39	245.68	0.38	633.95	0.92	0.75		
MEAN	242.67	384.91	179.60	0.35	979.04	0.92	0.75	0.75	1.10
HUB	197.14	346.38	64.54	0.31	1670.82	0.92	0.75		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.09	1.01	8.52	532.11	1.00	522.68	497.51	4.23
MEAN	9.13	1.01	8.55	532.98	1.00	523.36	497.92	4.14
HUB	9.21	1.02	8.56	534.71	1.01	524.02	498.78	4.06

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	5.90	35.76	31.50	4.26	0.93	0.04	1.40
MEAN	10.49	27.81	23.50	4.31	0.87	0.08	1.64
HUB	21.29	10.74	6.50	4.24	0.87	0.16	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.824	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	395.4791	64.2194	390.2301	1110.8884	0.3560	-0.2830	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1308	8.3749	520.7271	498.2248	4.4661	9.3453	33.0000	23.6547

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   408.6673    93.3195   397.8698  1109.9882     0.3682    -0.4399     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.0763     8.2757   519.8764   498.1911   410.5396     0.1105     0.0537

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   397.4555     0.0000   397.4555  1110.7642     0.3578    -0.1009     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2987   520.6008   498.1150     0.0000     0.0600     0.1449    -0.4017

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.2435     9.0556     1.0046   533.2656     2.7481   537.8539     4.1694

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  17141.920       0.217      47.189  493746.625   0.887122E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0530   Tt4 =   533.2656   T1  =   506.4094

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    167463.89    460.9982     89.1219      1.1406      0.6959      5.5902      1.0530     37.3740
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50µm, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 10% 39000 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.147   EfDer =  0.957    SH =  0.515696E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     26.817    2405.768       4.265     457.735       1.000       1.000       0.980
  W Kg/sec =  12.190  Wdry =  26.816  WH2O = 0.001  lbm/sec   H2O =   0.020g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     86.835    2560.957       1.381       0.248      53.350      32.000       0.050

    CFM        SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  65033.578   21041.752       3.272     831.557     254.177     619.754       2.438

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   187.70    -0.06   187.70     0.18     0.45   461.04
 MEAN    17.06     0.00    -0.02   187.70    -0.06   187.70     0.18     0.39
 HUB     12.51     0.00    -0.02   187.70    -0.06   187.70     0.18     0.31

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.57    50.47    16.10   433.11   472.09      4.17   454.90   448.23     1.97
 MEAN    62.35    47.20    15.15   358.17   404.42      4.17   454.90   448.23     1.97
 HUB     54.45    38.62    15.83   262.64   322.87      4.17   454.90   448.23     1.97

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   389.08   297.05   251.29  1051.48      0.37     7.29     6.52    16.04
 MEAN    18.04   394.32   301.13   254.57  1048.44      0.38     7.43     6.80    12.53
 HUB     15.00   427.86   340.46   259.15  1044.69      0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    433.11   285.76   136.06     0.27  6129.53      0.92     0.88
 MEAN   378.65   266.12    77.52     0.25  5432.31      0.92     0.88     0.88     1.74
 HUB    314.91   260.40    25.54     0.25  5107.65      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.91     1.15     4.47   478.43     1.05   466.26   462.24     1.32
 MEAN     4.83     1.13     4.39   476.08     1.04   463.57   460.75     1.46
 HUB      4.80     1.12     4.28   474.98     1.04   460.26   460.08     1.66

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.77    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    49.79    16.94    12.70     4.24     0.95     0.51     2.22
 HUB     52.72    -5.63    -9.30     3.67     0.95     0.38     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950      1.000       0.957       1.812     33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   406.0566   300.5462   273.0456  1048.0590     0.3874    -0.0370     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8413     4.3709   463.2381   461.0217     1.4924    47.7449    35.4000   -12.3449

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   271.0554    66.3084   262.8197  1056.3395     0.2566     0.5078     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8299     4.6165   470.5901   460.9368   554.9116     0.0344     0.5999

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   269.8990     0.0000   269.8990  1056.3860     0.2555     0.4799     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.5967	470.6402	460.8972	0.0000	0.0600	0.0830	0.4652

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8202	4.8073	1.1272	476.4986	18.7650	169.4940	1.3139

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
116670.711	0.622	176.811	281303.063	0.568022E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =14.676 EfDer = 0.961 SH = 0.621298E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.817	2405.768	4.807	476.498	1.000	1.000	0.980

W Kg/sec = 12.190 Wdry = 26.816 WH2O = 0.002 lbm/sec H2O = 0.026g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.597	2510.043	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60710.441	21041.664	2.567	590.487	230.065	468.502	2.036

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	246.75	-0.08	246.75	0.23	0.47	450.12
MEAN	18.08	0.00	-0.02	246.75	-0.08	246.75	0.23	0.43	
HUB	15.21	0.00	-0.02	246.75	-0.08	246.75	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.24	46.36	13.88	431.43	497.09	4.63	471.60	460.91	1.22
MEAN	56.98	42.30	14.68	379.54	452.77	4.63	471.60	460.91	1.22
HUB	52.31	37.84	14.47	319.32	403.62	4.63	471.60	460.91	1.22

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	357.96	246.20	259.85	1070.36	0.33	2.33	2.04	9.02
MEAN	18.01	358.03	243.52	262.45	1067.95	0.34	2.40	2.13	7.35
HUB	15.22	379.98	272.00	265.33	1065.58	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	428.70	317.54	182.51	0.30	5029.10	0.92	0.88		
MEAN	378.11	294.94	134.58	0.28	4387.40	0.92	0.88	0.88	1.69
HUB	319.60	269.57	47.60	0.25	4141.93	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.38	1.12	4.98	493.48	1.04	483.18	471.17	0.81
MEAN	5.30	1.10	4.91	491.31	1.03	481.00	469.92	0.88
HUB	5.27	1.10	4.83	490.48	1.03	478.87	469.46	0.94

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	43.45	35.08	31.50	3.58	0.93	0.54	1.40
MEAN	42.86	27.15	23.50	3.65	0.95	0.51	1.63
HUB	45.71	10.17	6.50	3.67	0.95	0.50	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.961	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	383.3200	244.2081	295.4601	1066.7651	0.3593	-0.1093	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3121	4.8642	479.9434	470.1864	0.9100	39.5749	30.6000	-8.9749

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	285.9149	60.6160	279.4156	1072.5736	0.2666	0.3579	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.3064	5.0539	485.1855	470.1341	491.5697	0.0241	0.4554

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	296.3416	0.0000	296.3416	1072.0258	0.2764	0.3491	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0205	484.6972	470.1063	0.0000	0.0600	0.0627	0.2763

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8368	5.2906	1.1005	491.7590	15.2611	191.2021	1.4822

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
94898.828	0.516	143.816	255436.703	0.642974E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.682 EfDer = 0.976 SH = 0.673551E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.817	2405.768	5.291	491.759	1.000	1.000	0.980

W Kg/sec = 12.190 Wdry = 26.815 WH2O = 0.002 lbm/sec H2O = 0.031g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.551	2470.790	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56928.914	21041.623	2.568	545.479	212.373	424.468	1.999

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	250.48	-0.09	250.48	0.23	0.46	432.73
MEAN	17.74	0.00	-0.02	250.48	-0.09	250.48	0.23	0.42	
HUB	15.05	0.00	-0.02	250.48	-0.09	250.48	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.28	46.36	12.92	421.36	490.26	5.10	486.71	470.10	0.76
MEAN	56.08	43.40	12.68	372.41	448.88	5.10	486.71	470.10	0.76
HUB	51.60	38.84	12.76	315.96	403.27	5.10	486.71	470.10	0.76

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	350.05	230.16	263.74	1085.88	0.32	2.26	1.98	8.75
MEAN	17.51	352.07	230.62	266.02	1083.83	0.32	2.34	2.07	6.78
HUB	14.85	375.93	263.08	268.54	1081.81	0.35	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	415.90	322.58	185.74	0.30	4561.18	0.92	0.89		
MEAN	367.54	299.19	136.92	0.28	4038.85	0.92	0.89	0.89	1.64
HUB	311.77	272.91	48.69	0.25	3908.00	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.85	1.11	5.45	507.16	1.03	497.31	478.63	0.54
MEAN	5.78	1.09	5.38	505.40	1.03	495.43	477.70	0.58
HUB	5.76	1.09	5.31	504.95	1.03	493.59	477.47	0.61

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.11	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	40.92	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.41	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	378.5203	232.1311	298.9862	1082.5967	0.3496	-0.1172	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7930	5.3291	494.3152	477.9323	0.5983	37.8255	31.5000	-6.3255

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	294.2763	64.1944	287.1892	1087.5746	0.2706	0.3060	2.3726

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.7893     5.5058   498.8726   477.8939   451.3937     0.0187     0.4300

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   299.2383     0.0000   299.2383  1087.3080     0.2752     0.3336     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.4839   498.6356   477.8678     0.0000     0.0600     0.0500     0.2538

    STAGE EXIT CONDITIONS, STAGE             3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8571     5.7762     1.0918   505.8353    14.0771   196.6945     1.5248

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  87547.023       0.506     132.675  253826.672   0.697809E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =11.087   EfDer =  0.986    SH =  0.733208E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.817    2405.768       5.776     505.835       1.000       1.000       0.980
 W Kg/sec =  12.190  Wdry =  26.815  WH2O = 0.002  lbm/sec   H2O =   0.035g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     67.396    2436.169       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  53596.461   21041.572       2.602     513.330     197.287     395.845       2.006

ROTOR LEADING EDGE CONDITIONS, STAGE   4

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    19.26     0.00    -0.02   250.58    -0.09   250.58     0.23     0.44   409.45
 MEAN   16.97     0.00    -0.02   250.58    -0.09   250.58     0.23     0.40
 HUB    14.32     0.00    -0.02   250.58    -0.09   250.58     0.23     0.36

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    58.22    46.36    11.86   404.35   475.77     5.57   500.79   477.86     0.52
 MEAN   54.89    43.80    11.09   356.29   435.65     5.57   500.79   477.86     0.52
 HUB    50.20    37.84    12.36   300.64   391.44     5.57   500.79   477.86     0.52

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    18.88   337.10   210.79   263.07  1099.77     0.31     2.16     1.89     8.34
 MEAN   16.57   339.05   211.34   265.12  1097.92     0.31     2.24     1.97     6.35
 HUB    13.89   361.42   243.20   267.36  1096.10     0.33     2.26     2.10     4.19

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   396.37   321.95   185.58     0.29  3981.35     0.92     0.90
 MEAN  347.96   298.25   136.62     0.27  3504.12     0.92     0.90     0.90     1.60
 HUB   291.61   271.71    48.41     0.25  3379.25     0.92     0.90

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.29     1.09     5.90   519.28     1.03   510.14   484.79     0.39
 MEAN    6.23     1.08     5.84   517.66     1.02   508.42   483.99     0.41
 HUB     6.21     1.08     5.77   517.24     1.02   506.74   483.79     0.43

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    38.70    35.20    31.50     3.70     0.93     0.48     1.40
 MEAN   38.56    27.26    23.50     3.76     0.94     0.46     1.62
 HUB    42.29    10.26     6.50     3.76     0.94     0.46     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.986       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   360.1412   212.5247   290.7489  1097.0591     0.3283    -0.0927     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.2416     5.7983   507.6334   484.1851     0.4236    36.1652    32.4000    -3.7652
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   292.0272    65.4932   284.5883  1100.9097     0.2653     0.2686     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2397     5.9457   511.2046   484.1598   432.2457     0.0146     0.4084

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   289.6907     0.0000   289.6907  1101.0194     0.2631     0.3191     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9398   511.3137   484.1360     0.0000     0.0600     0.0414     0.2543

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8703     6.2287     1.0783   518.0604    12.2260   212.1157     1.6443

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  76044.797       0.484     115.244  259676.750   0.761153E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.627   EfDer =  0.993    SH =  0.803521E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.817    2405.768       6.229     518.060       1.000       1.000       0.980
 W Kg/sec =  12.190  Wdry =  26.815  WH2O = 0.002  lbm/sec   H2O =   0.041g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     63.251    2407.253       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50754.027   21041.516       2.753     509.668     185.156     384.739       2.078

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   239.00    -0.08   239.00     0.22     0.41   384.84
 MEAN    15.91     0.00    -0.02   239.00    -0.08   239.00     0.22     0.37
 HUB     13.07     0.00    -0.02   239.00    -0.08   239.00     0.22     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.15    47.36    10.79   384.62   452.89      6.03   513.47   484.13     0.38
 MEAN    54.43    44.80     9.63   334.08   410.84      6.03   513.47   484.13     0.38
 HUB     48.95    38.84    10.11   274.40   363.95      6.03   513.47   484.13     0.38

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   320.09   198.02   251.49  1112.27      0.29     2.05     1.78     7.43
 MEAN    15.50   319.23   194.03   253.49  1110.35      0.29     2.13     1.86     5.75
 HUB     12.59   335.94   217.96   255.63  1108.46      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    376.64   308.47   178.62     0.28  3553.90      0.92     0.91
 MEAN   325.36   285.49   131.33     0.26  3008.31      0.92     0.91     0.91     1.59
 HUB    264.32   259.80    46.36     0.23  2745.20      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.72     1.08     6.35   530.06     1.02   521.82   489.97     0.30
 MEAN     6.64     1.07     6.27   528.21     1.02   520.02   489.10     0.32
 HUB      6.60     1.06     6.20   527.33     1.02   518.25   488.68     0.34

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.22    35.38    31.50     3.88     0.93     0.47     1.40
 MEAN    37.43    27.39    23.50     3.89     0.94     0.45     1.64
 HUB     40.45    10.28     6.50     3.78     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   349.6824   197.5881   288.5078  1108.9304     0.3153    -0.1731     2.0437
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    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6459     6.2089   518.7028   489.2415     0.3320    34.4058    33.0000    -1.4058

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   294.8816    67.3365   287.0905  1111.9606     0.2652     0.1503     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6439     6.3310   521.5421   489.2215   410.5396     0.0252     0.3841

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   286.8435     0.0000   286.8435  1112.3541     0.2579     0.3074     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3432   521.9178   489.2111     0.0000     0.0600     0.0373     0.1824

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8793     6.6393     1.0659   528.5317    10.4721   231.8113     1.7970

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  65144.352       0.459      98.724  272237.719   0.836582E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1547   Tt4 =   528.5317   T1  =   457.7346

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    440305.72    667.2701     86.8351      1.5568      0.8402     15.1475      1.1547     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 38334 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.252   EfDer =  0.956    SH =  0.497073E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.841    2330.631       4.199     451.561       1.000       1.000       0.980
  W Kg/sec =  11.746  Wdry =  25.839  WH2O = 0.001  lbm/sec   H2O =   0.020g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     84.401    2497.877       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  62724.348   20275.496       3.366     831.557     247.052     619.754       2.509

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   181.03    -0.06   181.03     0.18     0.44   449.68
 MEAN    17.06     0.00    -0.02   181.03    -0.06   181.03     0.18     0.38
 HUB     12.51     0.00    -0.02   181.03    -0.06   181.03     0.18     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.67    50.47    16.20   419.59   457.03     4.11   448.92   443.85     2.51
 MEAN    62.45    47.20    15.25   346.98   391.42     4.11   448.92   443.85     2.51
 HUB     54.57    38.62    15.95   254.44   312.32     4.11   448.92   443.85     2.51

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   376.82   288.06   242.93  1043.93      0.36     7.29     6.52    16.04
 MEAN    18.04   381.73   291.93   245.95  1041.07      0.37     7.43     6.80    12.53
 HUB     15.00   413.86   329.71   250.13  1037.53      0.40     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    419.59   276.25   131.52     0.26  5943.98      0.92     0.88
 MEAN   366.83   257.10    74.89     0.25  5266.39      0.92     0.88     0.88     1.75
 HUB    305.08   251.34    24.63     0.24  4946.48      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.80     1.14     4.39   471.01     1.04   459.59   457.68     1.69
 MEAN     4.73     1.13     4.32   468.79     1.04   457.07   456.21     1.87
 HUB      4.70     1.12     4.21   467.74     1.04   453.97   455.53     2.12

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.86    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    49.89    16.94    12.70     4.24     0.95     0.52     2.22
 HUB     52.81    -5.62    -9.30     3.68     0.95     0.38     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.956       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   393.0105   291.3670   263.7471  1040.7058     0.3776    -0.0370     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.7380     4.2992   456.7578   456.4719     1.9051    47.8484    35.4000   -12.4484

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   262.3156    64.1704   254.3455  1048.5208     0.2502     0.5089     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.7276     4.5287   463.6464   456.3914   554.9116     0.0338     0.6005

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   261.1715     0.0000   261.1715  1048.5664     0.2491     0.4798     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.5097   463.6944   456.3574     0.0000     0.0600     0.0836     0.4651
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8189     4.7060     1.1207   469.1802    17.6201   169.0573     1.3105

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 109550.539       0.622     159.975  273634.031   0.542353E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.699   EfDer =  0.961    SH =  0.588898E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.841    2330.631       4.706     469.180       1.000       1.000       0.980
 W Kg/sec =  11.746  Wdry =  25.839  WH2O = 0.002  lbm/sec   H2O =   0.025g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.769    2450.540       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58763.699   20275.422       2.628     590.487     224.714     468.502       2.085

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   238.84    -0.08   238.84     0.23     0.46   439.45
 MEAN    18.08     0.00    -0.02   238.84    -0.08   238.84     0.23     0.42
 HUB     15.21     0.00    -0.02   238.84    -0.08   238.84     0.23     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.26    46.36    13.90   417.96   481.46     4.54   464.59   456.37     1.56
 MEAN    57.00    42.30    14.70   367.69   438.52     4.54   464.59   456.37     1.56
 HUB     52.34    37.84    14.50   309.35   390.89     4.54   464.59   456.37     1.56

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   346.91   238.26   252.14  1061.74      0.33     2.33     2.04     9.02
 MEAN    18.01   346.97   235.81   254.53  1059.48      0.33     2.40     2.13     7.35
 HUB     15.22   368.20   263.48   257.18  1057.24      0.35     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    415.31   308.09   177.05     0.29  4867.06      0.92     0.88
 MEAN   366.30   286.03   130.49     0.27  4248.38      0.92     0.88     0.88     1.69
 HUB    309.61   261.29    46.13     0.25  4012.28      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.23     1.11     4.87   485.10     1.03   475.42   466.54     1.04
 MEAN     5.17     1.10     4.80   483.08     1.03   473.40   465.31     1.13
 HUB      5.14     1.09     4.73   482.31     1.03   471.40   464.85     1.21

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.38    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN    42.81    27.14    23.50     3.64     0.95     0.51     1.63
 HUB     45.69    10.17     6.50     3.67     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.961       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   371.4494   236.4698   286.4554  1058.3539     0.3510    -0.1094     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.1758     4.7584   472.3992   465.5714     1.1687    39.5398    30.6000    -8.9398

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   277.5713    58.8471   271.2616  1063.8274     0.2609     0.3566     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.1707     4.9347   477.2991   465.5215   491.5697     0.0235     0.4540

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   287.6291     0.0000   287.6291  1063.3107     0.2705     0.3476     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9035	476.8418	465.4977	0.0000	0.0600	0.0625	0.2746

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8366	5.1558	1.0956	483.4948	14.3153	191.1999	1.4822

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
89013.930	0.516	129.985	248709.438	0.606838E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.619 EfDer = 0.976 SH = 0.632465E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.841	2330.631	5.156	483.495	1.000	1.000	0.980

W Kg/sec = 11.746 Wdry = 25.839 WH2O = 0.002 lbm/sec H2O = 0.028g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
71.131	2413.991	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55282.051	20275.385	2.620	545.479	208.215	424.468	2.039

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	243.23	-0.08	243.23	0.23	0.45	422.78
MEAN	17.74	0.00	-0.02	243.23	-0.08	243.23	0.23	0.41	
HUB	15.05	0.00	-0.02	243.23	-0.08	243.23	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.22	46.36	12.86	408.20	475.24	4.97	478.74	465.49	0.98
MEAN	56.02	43.40	12.62	360.78	435.18	4.97	478.74	465.49	0.98
HUB	51.54	38.84	12.70	306.10	391.03	4.97	478.74	465.49	0.98

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	339.50	222.20	256.68	1076.37	0.32	2.26	1.98	8.75
MEAN	17.51	341.55	222.90	258.78	1074.45	0.32	2.34	2.07	6.78
HUB	14.85	364.74	254.67	261.10	1072.56	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	402.91	313.91	180.70	0.29	4403.53	0.92	0.89		
MEAN	356.06	291.03	133.15	0.27	3903.78	0.92	0.89	0.89	1.64
HUB	302.03	265.36	47.35	0.25	3783.16	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.67	1.10	5.30	497.90	1.03	488.63	473.95	0.70
MEAN	5.61	1.09	5.24	496.26	1.03	486.88	473.03	0.74
HUB	5.60	1.09	5.17	495.87	1.03	485.17	472.82	0.79

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.88	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	40.74	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.29	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	367.2739	224.3675	290.7737	1073.2749	0.3422	-0.1179	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6216	5.1895	485.8306	473.2668	0.7704	37.6546	31.5000	-6.1546

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	286.5322	62.5051	279.6316	1077.9525	0.2658	0.3019	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6184	5.3526	490.0754	473.2302	451.3937	0.0181	0.4265

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	291.3202	0.0000	291.3202	1077.7006	0.2703	0.3303	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3322	489.8528	473.2079	0.0000	0.0600	0.0493	0.2498

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8578	5.6062	1.0874	496.6769	13.1829	197.2580	1.5291

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
81980.789	0.505	119.715	247448.453	0.652609E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.943 EfDer = 0.987 SH = 0.682491E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.841	2330.631	5.606	496.677	1.000	1.000	0.980

W Kg/sec = 11.746 Wdry = 25.839 WH2O = 0.002 lbm/sec H2O = 0.033g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
66.302	2381.741	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52200.066	20275.346	2.645	513.330	194.083	395.845	2.040

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	244.05	-0.08	244.05	0.23	0.43	400.30
MEAN	16.97	0.00	-0.02	244.05	-0.08	244.05	0.23	0.39	
HUB	14.32	0.00	-0.02	244.05	-0.08	244.05	0.23	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.08	46.36	11.72	391.72	461.60	5.41	491.89	473.20	0.67
MEAN	54.74	43.80	10.94	345.16	422.80	5.41	491.89	473.20	0.67
HUB	50.05	37.84	12.21	291.25	380.05	5.41	491.89	473.20	0.67

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	327.24	202.93	256.72	1089.46	0.30	2.16	1.89	8.34
MEAN	16.57	329.30	203.85	258.61	1087.73	0.30	2.24	1.97	6.35
HUB	13.89	351.17	235.30	260.68	1086.03	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	383.99	314.15	181.06	0.29	3833.01	0.92	0.90		
MEAN	337.09	290.91	133.23	0.27	3380.08	0.92	0.90	0.90	1.59
HUB	282.50	264.92	47.20	0.24	3269.56	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.08	1.09	5.72	509.21	1.03	500.60	480.06	0.51
MEAN	6.03	1.07	5.66	507.73	1.02	499.01	479.27	0.53
HUB	6.01	1.07	5.60	507.37	1.02	497.45	479.09	0.56

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.33	35.19	31.50	3.69	0.93	0.47	1.40
MEAN	38.25	27.26	23.50	3.76	0.94	0.46	1.62
HUB	42.07	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.987	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	349.9051	205.0009	283.5635	1086.8979	0.3219	-0.0937	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.0360	5.6230	498.2610	479.4725	0.5467	35.8649	32.4000	-3.4649

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	285.0901	63.9374	277.8280	1090.4998	0.2614	0.2620	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.0344	5.7580	501.5701	479.4485	432.2457	0.0140	0.4031

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	282.7902	0.0000	282.7902	1090.6073	0.2593	0.3139	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.7526	501.6749	479.4274	0.0000	0.0600	0.0407	0.2480

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8713	6.0242	1.0746	508.1045	11.4285	213.3331	1.6537

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
71078.508	0.482	103.795	253440.516	0.706065E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.411 EfDer = 0.994 SH = 0.742500E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.841	2330.631	6.024	508.104	1.000	1.000	0.980

W Kg/sec = 11.746 Wdry = 25.839 WH2O = 0.002 lbm/sec H2O = 0.037g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.408	2354.806	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49561.477	20275.299	2.790	509.668	182.685	384.739	2.106

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	233.38	-0.08	233.38	0.21	0.40	376.46
MEAN	15.91	0.00	-0.02	233.38	-0.08	233.38	0.21	0.37	
HUB	13.07	0.00	-0.02	233.38	-0.08	233.38	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.94	47.36	10.58	372.60	439.73	5.84	503.73	479.42	0.49
MEAN	54.21	44.80	9.41	323.65	399.08	5.84	503.73	479.42	0.49
HUB	48.73	38.84	9.89	265.83	353.80	5.84	503.73	479.42	0.49

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	310.93	190.15	246.01	1101.22	0.28	2.05	1.78	7.43
MEAN	15.50	310.35	186.77	247.86	1099.43	0.28	2.13	1.86	5.75
HUB	12.59	326.87	210.78	249.84	1097.67	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	364.87	301.75	174.72	0.27	3412.78	0.92	0.91		
MEAN	315.20	279.16	128.43	0.25	2895.80	0.92	0.91	0.91	1.58
HUB	256.06	253.91	45.29	0.23	2654.72	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.47	1.07	6.13	519.27	1.02	511.49	485.18	0.39
MEAN	6.40	1.06	6.06	517.57	1.02	509.83	484.34	0.41
HUB	6.37	1.06	6.00	516.79	1.02	508.20	483.94	0.43

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.70	35.38	31.50	3.88	0.93	0.47	1.40
MEAN	37.00	27.39	23.50	3.89	0.94	0.44	1.64
HUB	40.15	10.27	6.50	3.77	0.94	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	340.1734	190.1966	282.0340	1098.0653	0.3098	-0.1747	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.4079	6.0005	508.5720	484.4815	0.4286	33.9947	33.0000	-0.9947

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   288.5071    65.8808   280.8844  1100.8802     0.2621     0.1408     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.4063     6.1114   511.1832   484.4628   410.5396     0.0245     0.3772

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   280.6543     0.0000   280.6543  1101.2611     0.2548     0.3001     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.1228   511.5423   484.4529     0.0000     0.0600     0.0369     0.1730

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8800     6.4019     1.0627   517.8745     9.7708   233.7758     1.8122

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  60776.020       0.457      88.750  265976.906   0.770010E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1469   Tt4 =   517.8745   T1  =   451.5609

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    412399.78    602.2197     84.4009      1.5245      0.8406     15.2515      1.1469     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 37357 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.298   EfDer =  0.956    SH =  0.472075E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     26.431    2302.165       4.337     449.672       1.000       1.000       0.980
  W Kg/sec =  12.014  Wdry =  26.430  WH2O = 0.001  lbm/sec   H2O =   0.019g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.410    2472.547       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  61835.391   20739.000       3.406     831.557     244.153     619.754       2.538

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   178.47    -0.06   178.47     0.17     0.44   445.12
 MEAN    17.06     0.00    -0.02   178.47    -0.06   178.47     0.17     0.38
 HUB     12.51     0.00    -0.02   178.47    -0.06   178.47     0.17     0.30

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.71    50.47    16.24   414.46   451.31      4.25   447.11   442.66     2.70
 MEAN    62.50    47.20    15.30   342.74   386.48      4.25   447.11   442.66     2.70
 HUB     54.63    38.62    16.01   251.33   308.30      4.25   447.11   442.66     2.70

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   372.17   284.69   239.71  1041.57      0.36     7.29     6.52    16.04
 MEAN    18.04   376.93   288.47   242.62  1038.77      0.36     7.43     6.80    12.53
 HUB     15.00   408.51   325.64   246.66  1035.31      0.39     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    414.46   272.58   129.77     0.26  5874.38      0.92     0.87
 MEAN   362.35   253.62    73.88     0.24  5203.92      0.92     0.87     0.87     1.75
 HUB    301.35   247.85    24.28     0.24  4885.31      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.95     1.14     4.53   468.66     1.04   457.52   456.46     1.82
 MEAN     4.87     1.12     4.45   466.49     1.04   455.06   454.99     2.01
 HUB      4.84     1.12     4.35   465.46     1.04   452.04   454.30     2.28

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.90    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    49.93    16.94    12.70     4.24     0.95     0.52     2.22
 HUB     52.86    -5.62    -9.30     3.68     0.95     0.38     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.956       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   388.0429   287.9110   260.1626  1038.4196     0.3737    -0.0369     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8818     4.4385   454.7571   455.2484     2.0504    47.8984    35.4000   -12.4984

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   258.9405    63.3447   251.0729  1046.0585     0.2475     0.5095     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8714     4.6707   461.4750   455.1718   554.9116     0.0336     0.6009

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   257.8015     0.0000   257.8015  1046.1035     0.2464     0.4798     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.6512   461.5221   455.1398     0.0000     0.0600     0.0839     0.4651
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8184     4.8493     1.1181   466.8672    17.1965   168.8572     1.3090

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 106918.133       0.622     159.700  280686.469   0.513031E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.714   EfDer =  0.961    SH =  0.555060E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.431    2302.165       4.849     466.867       1.000       1.000       0.980
 W Kg/sec =  12.014  Wdry =  26.430  WH2O = 0.001  lbm/sec   H2O =   0.024g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.015    2426.598       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58011.930   20738.930       2.654     590.487     222.507     468.502       2.106

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   235.79    -0.08   235.79     0.23     0.45   435.16
 MEAN    18.08     0.00    -0.02   235.79    -0.08   235.79     0.23     0.41
 HUB     15.21     0.00    -0.02   235.79    -0.08   235.79     0.23     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.27    46.36    13.91   412.85   475.51     4.68   462.40   455.15     1.68
 MEAN    57.01    42.30    14.71   363.20   433.09     4.68   462.40   455.15     1.68
 HUB     52.35    37.84    14.51   305.57   386.03     4.68   462.40   455.15     1.68

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   342.72   235.32   249.16  1058.98      0.32     2.33     2.04     9.02
 MEAN    18.01   342.77   232.93   251.47  1056.77      0.32     2.40     2.13     7.35
 HUB     15.22   363.70   260.28   254.04  1054.58      0.34     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    410.24   304.43   174.92     0.29  4806.88      0.92     0.88
 MEAN   361.82   282.57   128.89     0.27  4196.55      0.92     0.88     0.88     1.69
 HUB    305.83   258.09    45.55     0.24  3963.50      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.38     1.11     5.01   482.40     1.03   472.95   465.33     1.13
 MEAN     5.31     1.10     4.94   480.43     1.03   470.98   464.10     1.21
 HUB      5.29     1.09     4.87   479.67     1.03   469.04   463.64     1.31

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.36    35.07    31.50     3.57     0.93     0.54     1.40
 MEAN    42.81    27.14    23.50     3.64     0.95     0.51     1.63
 HUB     45.70    10.17     6.50     3.67     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.961       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   366.9269   233.5853   282.9722  1055.6670     0.3476    -0.1094     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3236     4.9021   470.0067   464.3621     1.2610    39.5387    30.6000    -8.9387

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   274.3383    58.1617   268.1021  1061.0145     0.2586     0.3563     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3185     5.0800   474.7815   464.3145   491.5697     0.0233     0.4536

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   284.2540     0.0000   284.2540  1060.5099     0.2680     0.3471     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0484	474.3359	464.2922	0.0000	0.0600	0.0625	0.2742

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8365	5.3035	1.0937	480.8336	13.9671	191.1492	1.4818

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
86849.578	0.516	129.724	255215.109	0.571186E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.601 EfDer = 0.976 SH = 0.593576E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.431	2302.165	5.303	480.833	1.000	1.000	0.980

W Kg/sec = 12.014 Wdry = 26.430 WH2O = 0.002 lbm/sec H2O = 0.028g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.537	2391.097	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54644.211	20738.898	2.642	545.479	206.476	424.468	2.056

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	240.42	-0.08	240.42	0.23	0.44	418.77
MEAN	17.74	0.00	-0.02	240.42	-0.08	240.42	0.23	0.40	
HUB	15.05	0.00	-0.02	240.42	-0.08	240.42	0.23	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.20	46.36	12.84	403.21	469.52	5.12	476.19	464.29	1.06
MEAN	56.00	43.40	12.60	356.37	429.96	5.12	476.19	464.29	1.06
HUB	51.52	38.84	12.68	302.36	386.36	5.12	476.19	464.29	1.06

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	335.47	219.21	253.94	1073.27	0.31	2.26	1.98	8.75
MEAN	17.51	337.53	220.01	255.97	1071.39	0.32	2.34	2.07	6.78
HUB	14.85	360.51	251.57	258.22	1069.55	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	397.99	310.56	178.77	0.29	4344.31	0.92	0.89		
MEAN	351.71	287.87	131.70	0.27	3853.06	0.92	0.89	0.89	1.64
HUB	298.34	262.42	46.77	0.25	3737.03	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.82	1.10	5.45	494.87	1.03	485.82	472.76	0.76
MEAN	5.76	1.09	5.38	493.28	1.03	484.12	471.84	0.80
HUB	5.75	1.08	5.32	492.91	1.03	482.46	471.63	0.85

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.80	35.15	31.50	3.65	0.93	0.50	1.40
MEAN	40.68	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.25	10.27	6.50	3.77	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	362.9698	221.4523	287.5865	1070.2441	0.3391	-0.1180	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7729	5.3367	483.0930	472.0768	0.8330	37.5976	31.5000	-6.0976

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	283.5226	61.8485	276.6944	1074.8085	0.2638	0.3006	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7698	5.5008	487.2230	472.0417	451.3937	0.0178	0.4253

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	288.2435	0.0000	288.2435	1074.5621	0.2682	0.3291	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4802	487.0058	472.0206	0.0000	0.0600	0.0491	0.2484

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8580	5.7575	1.0856	493.6865	12.8537	197.4301	1.5305

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
79933.883	0.505	119.394	254044.656	0.611115E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.894 EfDer = 0.987 SH = 0.637775E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.431	2302.165	5.758	493.686	1.000	1.000	0.980

W Kg/sec = 12.014 Wdry = 26.430 WH2O = 0.002 lbm/sec H2O = 0.031g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.837	2359.766	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51657.770	20738.863	2.664	513.330	192.721	395.845	2.054

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	241.52	-0.08	241.52	0.22	0.42	396.61
MEAN	16.97	0.00	-0.02	241.52	-0.08	241.52	0.22	0.39	
HUB	14.32	0.00	-0.02	241.52	-0.08	241.52	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.03	46.36	11.67	386.94	456.20	5.56	489.00	472.02	0.72
MEAN	54.69	43.80	10.89	340.94	417.89	5.56	489.00	472.02	0.72
HUB	49.99	37.84	12.15	287.69	375.69	5.56	489.00	472.02	0.72

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	323.49	200.00	254.25	1086.05	0.30	2.16	1.89	8.34
MEAN	16.57	325.57	201.05	256.08	1084.36	0.30	2.24	1.97	6.35
HUB	13.89	347.24	232.31	258.08	1082.71	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	379.30	311.11	179.30	0.29	3777.69	0.92	0.90		
MEAN	332.97	288.06	131.92	0.27	3333.61	0.92	0.90	0.90	1.59
HUB	279.05	262.28	46.74	0.24	3227.99	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.24	1.08	5.87	505.89	1.02	497.48	478.88	0.55
MEAN	6.18	1.07	5.81	504.46	1.02	495.93	478.10	0.58
HUB	6.17	1.07	5.75	504.12	1.02	494.42	477.92	0.61

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.19	35.19	31.50	3.69	0.93	0.47	1.40
MEAN	38.14	27.26	23.50	3.76	0.94	0.46	1.62
HUB	41.99	10.27	6.50	3.77	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.987	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	345.9894	202.1821	280.7687	1083.5482	0.3193	-0.0940	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.1900	5.7730	495.1957	478.2976	0.5914	35.7577	32.4000	-3.3577

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	282.3878	63.3313	275.1945	1087.0568	0.2598	0.2596	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.1885	5.9084	498.4090	478.2747	432.2457	0.0138	0.4011

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	280.1028	0.0000	280.1028	1087.1633	0.2576	0.3120	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.9031	498.5121	478.2549	0.0000	0.0600	0.0405	0.2457

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8716	6.1782	1.0731	504.8202	11.1345	213.7678	1.6571

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
69250.086	0.481	103.436	260313.141	0.658880E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.333 EfDer = 0.994 SH = 0.691973E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.431	2302.165	6.178	504.820	1.000	1.000	0.980

W Kg/sec = 12.014 Wdry = 26.430 WH2O = 0.002 lbm/sec H2O = 0.036g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.042	2333.599	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49097.445	20738.818	2.806	509.668	181.613	384.739	2.118

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	231.20	-0.08	231.20	0.21	0.40	373.07
MEAN	15.91	0.00	-0.02	231.20	-0.08	231.20	0.21	0.36	
HUB	13.07	0.00	-0.02	231.20	-0.08	231.20	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.87	47.36	10.51	368.05	434.71	5.99	500.52	478.25	0.53
MEAN	54.13	44.80	9.33	319.70	394.60	5.99	500.52	478.25	0.53
HUB	48.65	38.84	9.81	262.58	349.92	5.99	500.52	478.25	0.53

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	307.46	187.22	243.88	1097.54	0.28	2.05	1.78	7.43
MEAN	15.50	306.98	184.07	245.67	1095.79	0.28	2.13	1.86	5.75
HUB	12.59	323.37	208.03	247.58	1094.08	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	360.42	299.12	173.20	0.27	3360.23	0.92	0.91		
MEAN	311.35	276.68	127.28	0.25	2853.97	0.92	0.91	0.91	1.58
HUB	252.94	251.62	44.91	0.23	2620.08	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.63	1.07	6.28	515.67	1.02	508.07	484.01	0.42
MEAN	6.56	1.06	6.21	514.04	1.02	506.46	483.17	0.45
HUB	6.53	1.06	6.15	513.28	1.02	504.88	482.78	0.47

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.51	35.38	31.50	3.88	0.93	0.46	1.40
MEAN	36.84	27.39	23.50	3.89	0.93	0.44	1.64
HUB	40.04	10.28	6.50	3.78	0.93	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	336.5471	187.4491	279.5118	1094.4478	0.3075	-0.1753	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.5637	6.1523	505.2266	483.3167	0.4642	33.8470	33.0000	-0.8470

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   286.0184    65.3126   278.4615  1097.1830     0.2607     0.1372     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.5621     6.2632   507.7556   483.2990   410.5396     0.0243     0.3747

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   278.2385     0.0000   278.2385  1097.5588     0.2535     0.2975     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.2747   508.1083   483.2895     0.0000     0.0600     0.0368     0.1695

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8802     6.5577     1.0614   514.3320     9.5126   234.5021     1.8178

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  59169.270       0.455      88.379  273301.875   0.716709E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1438   Tt4 =   514.3320   T1  =   449.6716

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    402120.97    600.6329     83.4104      1.5120      0.8407     15.2981      1.1438     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 34281 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.362   EfDer =  0.955    SH =  0.427622E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     28.404    2235.554       4.829     451.605       1.000       1.000       0.980
  W Kg/sec =  12.911  Wdry =  28.403  WH2O = 0.001  lbm/sec   H2O =   0.020g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.685    2395.861       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59883.668   22286.887       3.521     831.557     236.177     619.754       2.624

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   172.83    -0.06   172.83     0.17     0.42   431.32
 MEAN    17.06     0.00    -0.02   172.83    -0.06   172.83     0.17     0.36
 HUB     12.51     0.00    -0.02   172.83    -0.06   172.83     0.17     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.76    50.47    16.29   402.47   438.06      4.74   449.20   444.63     2.45
 MEAN    62.56    47.20    15.36   332.82   375.08      4.74   449.20   444.63     2.45
 HUB     54.70    38.62    16.08   244.06   299.11      4.74   449.20   444.63     2.45

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   361.44   276.50   232.77  1043.24      0.35     7.29     6.52    16.04
 MEAN    18.04   365.95   280.18   235.42  1040.62      0.35     7.43     6.80    12.53
 HUB     15.00   396.41   316.19   239.08  1037.37      0.38     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    402.47   264.67   125.96     0.25  5705.52      0.92     0.87
 MEAN   351.86   246.09    71.69     0.24  5054.27      0.92     0.87     0.87     1.75
 HUB    292.63   240.24    23.56     0.23  4743.66      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.46     1.13     5.03   469.51     1.04   459.00   457.76     1.72
 MEAN     5.39     1.12     4.95   467.47     1.04   456.69   456.34     1.89
 HUB      5.35     1.11     4.85   466.49     1.03   453.85   455.68     2.12

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.91    28.42    24.20     4.22     0.93     0.57     1.80
 MEAN    49.96    16.94    12.70     4.24     0.95     0.52     2.22
 HUB     52.91    -5.63    -9.30     3.67     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.955       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   376.6910   279.6312   252.3935  1040.2882     0.3621    -0.0369     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3962     4.9345   456.4097   456.5923     1.9249    47.9308    35.4000   -12.5308

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   251.7657    61.5896   244.1161  1047.4563     0.2404     0.5094     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3858     5.1762   462.7237   456.5270   554.9116     0.0327     0.6001

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   250.6189     0.0000   250.6189  1047.5006     0.2393     0.4787     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.1555   462.7698   456.4971     0.0000     0.0600     0.0842     0.4640
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8177     5.3622     1.1105   467.8209    16.2163   168.6145     1.3071

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 100831.609       0.622     161.849  300347.875   0.470083E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.678   EfDer =  0.961    SH =  0.511898E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     28.404    2235.554       5.362     467.821       1.000       1.000       0.980
 W Kg/sec =  12.911  Wdry =  28.403  WH2O = 0.001  lbm/sec   H2O =   0.025g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.949    2353.984       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  56412.555   22286.813       2.728     590.487     216.463     468.502       2.164

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   229.29    -0.08   229.29     0.22     0.44   422.13
 MEAN    18.08     0.00    -0.02   229.29    -0.08   229.29     0.22     0.40
 HUB     15.21     0.00    -0.02   229.29    -0.08   229.29     0.22     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.24    46.36    13.88   400.91   461.91     5.19   463.59   456.51     1.62
 MEAN    56.98    42.30    14.68   352.69   420.73     5.19   463.59   456.51     1.62
 HUB     52.31    37.84    14.47   296.73   375.06     5.19   463.59   456.51     1.62

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   333.10   227.85   242.98  1059.58      0.31     2.33     2.04     9.02
 MEAN    18.01   333.23   225.77   245.09  1057.51      0.32     2.40     2.13     7.35
 HUB     15.22   353.64   252.66   247.43  1055.47      0.34     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    398.37   296.85   170.52     0.28  4654.34      0.92     0.88
 MEAN   351.35   275.39   125.58     0.26  4067.52      0.92     0.88     0.88     1.68
 HUB    296.98   251.37    44.32     0.24  3847.49      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.91     1.10     5.53   482.42     1.03   473.50   466.24     1.12
 MEAN     5.84     1.09     5.46   480.58     1.03   471.65   465.07     1.20
 HUB      5.82     1.08     5.39   479.89     1.03   469.84   464.63     1.29

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.16    35.06    31.50     3.56     0.93     0.53     1.40
 MEAN    42.65    27.13    23.50     3.63     0.95     0.51     1.63
 HUB     45.60    10.16     6.50     3.66     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.961       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   356.7454   226.4029   275.6974  1056.4663     0.3377    -0.1099     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8541     5.4153   470.7327   465.3173     1.2458    39.3929    30.6000    -8.7929

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   267.7132    56.7571   261.6276  1061.4703     0.2522     0.3529     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8491     5.5992   475.2034   465.2762   491.5697     0.0223     0.4503

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   277.3115     0.0000   277.3115  1060.9939     0.2614     0.3440     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5662	474.7827	465.2555	0.0000	0.0600	0.0617	0.2705

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8370	5.8334	1.0879	480.9664	13.1462	191.5391	1.4848

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
81750.703	0.515	131.221	273447.406	0.528030E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.464 EfDer = 0.977 SH = 0.550729E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
28.404	2235.554	5.833	480.966	1.000	1.000	0.980

W Kg/sec = 12.911 Wdry = 28.403 WH2O = 0.002 lbm/sec H2O = 0.028g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.925	2321.592	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53337.668	22286.777	2.704	545.479	201.759	424.468	2.104

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	234.68	-0.08	234.68	0.22	0.43	406.60
MEAN	17.74	0.00	-0.02	234.68	-0.08	234.68	0.22	0.39	
HUB	15.05	0.00	-0.02	234.68	-0.08	234.68	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.07	46.36	12.71	391.54	456.55	5.64	476.54	465.25	1.06
MEAN	55.86	43.40	12.46	346.06	418.19	5.64	476.54	465.25	1.06
HUB	51.37	38.84	12.53	293.61	375.93	5.64	476.54	465.25	1.06

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	326.39	211.60	248.52	1072.96	0.30	2.26	1.98	8.75
MEAN	17.51	328.57	212.78	250.37	1071.22	0.31	2.34	2.07	6.78
HUB	14.85	351.08	244.01	252.42	1069.50	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	386.47	303.88	174.87	0.28	4193.35	0.92	0.89		
MEAN	341.53	281.54	128.75	0.26	3726.46	0.92	0.89	0.89	1.63
HUB	289.71	256.53	45.70	0.24	3624.73	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.37	1.09	5.98	494.12	1.03	485.56	473.37	0.78
MEAN	6.31	1.08	5.91	492.66	1.02	483.98	472.50	0.82
HUB	6.29	1.08	5.85	492.34	1.02	482.43	472.32	0.87

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.41	35.13	31.50	3.63	0.93	0.50	1.40
MEAN	40.36	27.21	23.50	3.71	0.94	0.48	1.62
HUB	44.03	10.26	6.50	3.76	0.94	0.48	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.977	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	353.4825	214.1753	281.2096	1070.1180	0.3303	-0.1192	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3178	5.8638	482.9926	472.7309	0.8537	37.2937	31.5000	-5.7937

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	277.6305	60.5632	270.9443	1074.3729	0.2584	0.2937	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3150	6.0321	486.8416	472.7005	451.3937	0.0169	0.4196

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	282.2006	0.0000	282.2006	1074.1394	0.2627	0.3238	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.0108	486.6357	472.6815	0.0000	0.0600	0.0479	0.2417

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8593	6.3023	1.0804	493.0389	12.0732	198.5133	1.5389

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
75085.180	0.503	120.522	272615.688	0.568567E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.660 EfDer = 0.988 SH = 0.594804E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
28.404	2235.554	6.302	493.039	1.000	1.000	0.980

W Kg/sec = 12.911 Wdry = 28.402 WH2O = 0.002 lbm/sec H2O = 0.032g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
64.593	2292.993	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50597.902	22286.740	2.715	513.330	189.079	395.845	2.094

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	236.56	-0.08	236.56	0.22	0.41	385.38
MEAN	16.97	0.00	-0.02	236.56	-0.08	236.56	0.22	0.38	
HUB	14.32	0.00	-0.02	236.56	-0.08	236.56	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.81	46.36	11.45	375.74	444.08	6.10	488.54	472.68	0.75
MEAN	54.46	43.80	10.66	331.08	406.98	6.10	488.54	472.68	0.75
HUB	49.75	37.84	11.91	279.37	366.13	6.10	488.54	472.68	0.75

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	315.12	192.34	249.61	1084.92	0.29	2.16	1.89	8.34
MEAN	16.57	317.41	193.93	251.28	1083.36	0.29	2.24	1.97	6.35
HUB	13.89	338.77	225.17	253.10	1081.82	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	368.33	305.41	175.99	0.28	3633.00	0.92	0.90		
MEAN	323.34	282.64	129.41	0.26	3215.55	0.92	0.90	0.90	1.58
HUB	270.98	257.22	45.81	0.24	3128.75	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.79	1.08	6.41	504.44	1.02	496.45	479.26	0.58
MEAN	6.74	1.07	6.35	503.13	1.02	495.03	478.53	0.61
HUB	6.72	1.07	6.29	502.85	1.02	493.63	478.38	0.64

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.62	35.19	31.50	3.69	0.93	0.47	1.40
MEAN	37.66	27.25	23.50	3.75	0.94	0.45	1.62
HUB	41.66	10.26	6.50	3.76	0.94	0.45	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.988	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	337.5070	195.0206	275.4596	1082.5686	0.3118	-0.0954	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7463	6.3122	494.3134	478.7225	0.6252	35.2978	32.4000	-2.8978

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	277.3774	62.2076	270.3117	1085.8176	0.2555	0.2497	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.7450     6.4495   497.2859   478.7025   432.2457     0.0132     0.3932

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   275.1102     0.0000   275.1102  1085.9216     0.2533     0.3042     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.4442   497.3864   478.6845     0.0000     0.0600     0.0395     0.2364

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8731     6.7344     1.0686   503.4713    10.4332   215.7059     1.6721

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  64891.836       0.478     104.161  279739.000   0.615183E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.013   EfDer =  0.996    SH =  0.646304E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     28.404    2235.554       6.734     503.471       1.000       1.000       0.980
 W Kg/sec =  12.911  Wdry =  28.402  WH2O = 0.002  lbm/sec   H2O =   0.037g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     61.084    2269.112       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  48239.906   22286.697       2.850     509.668     178.811     384.739       2.152

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   227.16    -0.08   227.16     0.21     0.39   362.76
 MEAN   15.91     0.00    -0.02   227.16    -0.08   227.16     0.21     0.35
 HUB    13.07     0.00    -0.02   227.16    -0.08   227.16     0.21     0.31

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    57.57    47.36    10.21   357.40   423.55     6.54   499.32   478.68     0.57
 MEAN   53.81    44.80     9.01   310.44   384.74     6.54   499.32   478.68     0.57
 HUB    48.31    38.84     9.47   254.98   341.55     6.54   499.32   478.68     0.57

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   299.78   179.48   240.12  1095.66     0.27     2.05     1.78     7.43
 MEAN   15.50   299.69   177.11   241.76  1094.05     0.27     2.13     1.86     5.75
 HUB    12.59   316.01   201.42   243.51  1092.46     0.29     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   349.99   294.50   170.51     0.27  3221.22     0.92     0.91
 MEAN  302.34   272.27   125.24     0.25  2745.96     0.92     0.91     0.91     1.56
 HUB   245.62   247.48    44.20     0.23  2536.84     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     7.19     1.07     6.83   513.58     1.02   506.35   484.21     0.46
 MEAN    7.12     1.06     6.77   512.08     1.02   504.86   483.42     0.48
 HUB     7.09     1.05     6.70   511.43     1.02   503.40   483.07     0.50

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    36.78    35.38    31.50     3.88     0.93     0.45     1.40
 MEAN   36.23    27.39    23.50     3.89     0.93     0.43     1.64
 HUB    39.60    10.29     6.50     3.79     0.93     0.42     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.996       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   328.8590   180.3536   274.9923  1092.7461     0.3009    -0.1778     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.1280     6.6994   503.6685   483.5599     0.5011    33.2589    33.0000    -0.2589
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   281.6812    64.3221   274.2389  1095.2546     0.2572     0.1233     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.1267     6.8104   505.9839   483.5446   410.5396     0.0236     0.3651

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   274.0316     0.0000   274.0316  1095.6194     0.2501     0.2871     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.8225   506.3254   483.5354     0.0000     0.0600     0.0366     0.1559

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8808     7.1218     1.0575   512.3621     8.8916   237.4342     1.8406

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  55309.219       0.452      88.779  294074.031   0.669547E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1345   Tt4 =   512.3621   T1  =   451.6053

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    377868.56    606.5325     80.6848      1.4749      0.8416     15.3617      1.1345     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 30029 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =13.847   EfDer =  0.967    SH =  0.800268E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     32.558    2121.632       5.592     461.414       1.000       1.000       0.980
  W Kg/sec =  14.799  Wdry =  32.556  WH2O = 0.003  lbm/sec   H2O =   0.041g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.718    2249.476       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60557.699   25546.125       3.519     831.557     236.284     619.754       2.623

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   174.78    -0.06   174.78     0.17     0.40   404.96
 MEAN    17.06     0.00    -0.02   174.78    -0.06   174.78     0.17     0.35
 HUB     12.51     0.00    -0.02   174.78    -0.06   174.78     0.17     0.28

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.42    50.47    14.95   381.96   420.10      5.49   458.96   452.62     3.32
 MEAN    61.05    47.20    13.85   315.86   361.05      5.49   458.96   452.62     3.32
 HUB     52.97    38.62    14.35   231.62   290.21      5.49   458.96   452.62     3.32

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   347.43   254.36   236.66  1052.64      0.33     7.29     6.52    16.04
 MEAN    18.04   354.29   261.56   238.97  1050.42      0.34     7.43     6.80    12.53
 HUB     15.00   387.09   301.89   242.28  1047.58      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    381.96   268.87   127.60     0.26  5248.64      0.92     0.89
 MEAN   333.93   249.69    72.37     0.24  4718.49      0.92     0.89     0.89     1.65
 HUB    277.72   243.48    24.17     0.23  4529.14      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.22     1.11     5.78   477.04     1.03   467.34   463.68     2.48
 MEAN     6.16     1.10     5.70   475.46     1.03   465.37   462.62     2.67
 HUB      6.13     1.10     5.59   474.90     1.03   462.85   462.28     2.94

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     47.06    28.33    24.20     4.13     0.93     0.53     1.80
 MEAN    47.58    16.85    12.70     4.15     0.94     0.48     2.22
 HUB     51.25    -5.70    -9.30     3.60     0.94     0.35     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.967       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   365.7888   261.0498   256.2313  1050.0513     0.3484    -0.0424     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.1673     5.6769   465.0422   462.8574     2.7148    45.5337    35.4000   -10.1337

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   256.8127    62.8242   249.0098  1056.1892     0.2432     0.4679     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.1597     5.9146   470.4975   462.7751   554.9116     0.0258     0.5570

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   255.3782     0.0000   255.3782  1056.2473     0.2418     0.4489     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.8971   470.5564   462.7498     0.0000     0.0600     0.0692     0.4318
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8359     6.1387     1.0977   475.8000    14.3870   176.0046     1.3644

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  89477.086       0.613     164.629  338683.875   0.854465E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =12.793   EfDer =  0.975    SH =  0.904918E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     32.558    2121.632       6.139     475.800       1.000       1.000       0.980
 W Kg/sec =  14.799  Wdry =  32.555  WH2O = 0.003  lbm/sec   H2O =   0.049g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     74.672    2215.215       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57477.879   25546.021       2.701     590.487     218.589     468.502       2.143

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   233.62    -0.08   233.62     0.22     0.42   397.25
 MEAN    18.08     0.00    -0.02   233.62    -0.08   233.62     0.22     0.39
 HUB     15.21     0.00    -0.02   233.62    -0.08   233.62     0.22     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.46    46.36    12.10   380.48   446.54     5.94   471.41   462.76     2.30
 MEAN    55.09    42.30    12.79   334.71   408.24     5.94   471.41   462.76     2.30
 HUB     50.33    37.84    12.49   281.61   365.96     5.94   471.41   462.76     2.30

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   321.63   203.67   248.93  1066.65      0.30     2.33     2.04     9.02
 MEAN    18.01   324.00   205.22   250.72  1064.98      0.30     2.40     2.13     7.35
 HUB     15.22   346.29   236.76   252.70  1063.33      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    378.07   303.95   174.41     0.28  4160.50      0.92     0.89
 MEAN   333.45   281.60   128.23     0.26  3697.47      0.92     0.89     0.89     1.59
 HUB    281.85   256.69    45.09     0.24  3605.48      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.67     1.09     6.27   488.19     1.03   479.87   470.81     1.70
 MEAN     6.61     1.08     6.20   486.81     1.02   478.37   469.95     1.79
 HUB      6.60     1.07     6.14   486.53     1.02   476.89   469.80     1.89

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.29    35.02    31.50     3.52     0.93     0.48     1.40
 MEAN    39.30    27.09    23.50     3.59     0.94     0.46     1.63
 HUB     43.14    10.12     6.50     3.62     0.94     0.46     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.975       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   349.1887   205.7966   282.1001  1063.8613     0.3282    -0.1235     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6223     6.1521   477.3729   470.1964     1.8605    36.1114    30.6000    -5.5114

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   275.0253    58.3073   268.7735  1067.9998     0.2575     0.2878     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6196     6.3251   481.0946   470.1473   491.5697     0.0165     0.3961

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   284.6855     0.0000   284.6855  1067.5111     0.2667     0.2978     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.2922	480.6599	470.1350	0.0000	0.0600	0.0468	0.2101

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8569	6.6067	1.0763	487.1754	11.3759	204.4742	1.5851

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
70758.695	0.495	130.189	309608.000	0.925147E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =10.356 EfDer = 0.990 SH = 0.951627E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
32.558	2121.632	6.607	487.175	1.000	1.000	0.980

W Kg/sec = 14.799 Wdry = 32.555 WH2O = 0.003 lbm/sec H2O = 0.055g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.207	2189.200	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54733.125	25545.975	2.654	545.479	205.518	424.468	2.065

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	240.82	-0.08	240.82	0.23	0.41	383.41
MEAN	17.74	0.00	-0.02	240.82	-0.08	240.82	0.23	0.38	
HUB	15.05	0.00	-0.02	240.82	-0.08	240.82	0.23	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.06	46.36	10.70	371.59	442.87	6.38	482.51	470.12	1.61
MEAN	53.76	43.40	10.36	328.42	407.32	6.38	482.51	470.12	1.61
HUB	49.17	38.84	10.33	278.65	368.35	6.38	482.51	470.12	1.61

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	317.05	186.41	256.46	1077.93	0.29	2.26	1.98	8.75
MEAN	17.51	321.29	191.50	257.98	1076.58	0.30	2.34	2.07	6.78
HUB	14.85	345.51	227.92	259.67	1075.25	0.32	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	366.78	313.53	180.36	0.29	3694.53	0.92	0.91		
MEAN	324.13	290.07	132.63	0.27	3354.00	0.92	0.91	0.91	1.53
HUB	274.94	263.89	47.02	0.25	3385.86	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.11	1.08	6.70	498.17	1.02	490.09	476.83	1.25
MEAN	7.06	1.07	6.64	497.16	1.02	488.86	476.24	1.30
HUB	7.07	1.07	6.58	497.25	1.02	487.66	476.31	1.35

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.01	35.12	31.50	3.62	0.93	0.44	1.40
MEAN	36.59	27.21	23.50	3.71	0.94	0.43	1.62
HUB	41.27	10.26	6.50	3.76	0.94	0.44	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.990	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	348.0999	192.7577	289.8586	1075.3873	0.3237	-0.1338	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.0749	6.5857	487.7880	476.4654	1.3504	33.6241	31.5000	-2.1241

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	287.2917	62.6708	280.3728	1078.8054	0.2663	0.2168	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.0735	6.7376	490.8939	476.4293	451.3937	0.0132	0.3606

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	291.8932	0.0000	291.8932	1078.5643	0.2706	0.2676	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7166	490.6795	476.4160	0.0000	0.0600	0.0382	0.1687

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8745	7.0626	1.0690	497.5285	10.3537	214.1171	1.6598

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
64406.418	0.479	118.502	309785.125	0.972222E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.316 EfDer = 0.998 SH = 0.100093E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
32.558	2121.632	7.063	497.528	1.000	1.000	0.980

W Kg/sec = 14.799 Wdry = 32.555 WH2O = 0.003 lbm/sec H2O = 0.060g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
66.369	2166.302	1.381	0.248	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52301.340	25545.926	2.642	513.330	194.287	395.845	2.037

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	244.53	-0.08	244.53	0.23	0.40	364.09
MEAN	16.97	0.00	-0.02	244.53	-0.08	244.53	0.23	0.37	
HUB	14.32	0.00	-0.02	244.53	-0.08	244.53	0.23	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.57	46.36	9.21	356.59	432.45	6.82	492.72	476.40	1.19
MEAN	52.12	43.80	8.32	314.21	398.21	6.82	492.72	476.40	1.19
HUB	47.32	37.84	9.48	265.13	360.74	6.82	492.72	476.40	1.19

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	308.30	166.53	259.46	1087.94	0.28	2.16	1.89	8.34
MEAN	16.57	312.64	172.44	260.79	1086.78	0.29	2.24	1.97	6.35
HUB	13.89	335.70	209.57	262.25	1085.64	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	349.56	317.52	183.03	0.29	3145.67	0.92	0.91		
MEAN	306.86	293.39	134.42	0.27	2859.37	0.92	0.91	0.91	1.48
HUB	257.17	266.54	47.60	0.25	2912.09	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.51	1.06	7.11	506.89	1.02	499.25	481.81	0.97
MEAN	7.47	1.06	7.06	506.04	1.02	498.18	481.34	1.00
HUB	7.48	1.06	7.00	506.20	1.02	497.14	481.44	1.03

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.69	35.20	31.50	3.70	0.93	0.40	1.40
MEAN	33.47	27.27	23.50	3.77	0.93	0.40	1.62
HUB	38.63	10.29	6.50	3.79	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.998	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	334.4577	173.4062	285.9935	1085.8969	0.3080	-0.1080	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.4827	7.0123	497.3841	481.5294	1.0281	31.2297	32.4000	1.1703

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	289.0483	64.8251	281.6854	1088.3778	0.2656	0.1646	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4817     7.1284   499.6599   481.5054   432.2457     0.0122     0.3299

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   286.6303     0.0000   286.6303  1088.4951     0.2633     0.2374     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.1240   499.7716   481.4883     0.0000     0.0600     0.0371     0.1544

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8793     7.4711     1.0578   506.3752     8.8473   235.4862     1.8255

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  55040.887       0.450     101.270  318937.031   0.102265E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.457   EfDer =  1.000    SH =  0.105491E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     32.558    2121.632       7.471     506.375       1.000       1.000       0.980
 W Kg/sec =  14.799  Wdry =  32.555  WH2O = 0.003  lbm/sec   H2O =   0.066g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     63.296    2147.296       1.381       0.249      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50216.844   25545.873       2.751     509.668     185.293     384.739       2.076

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   236.47    -0.08   236.47     0.22     0.38   343.28
 MEAN   15.91     0.00    -0.02   236.47    -0.08   236.47     0.22     0.35
 HUB    13.07     0.00    -0.02   236.47    -0.08   236.47     0.22     0.31

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    55.12    47.36     7.76   339.19   413.55     7.23   501.88   481.48     0.93
 MEAN   51.26    44.80     6.46   294.62   377.85     7.23   501.88   481.48     0.93
 HUB    45.67    38.84     6.83   241.99   338.40     7.23   501.88   481.48     0.93

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   294.46   153.42   251.34  1096.98     0.27     2.05     1.78     7.43
 MEAN   15.50   296.82   155.81   252.64  1095.78     0.27     2.13     1.86     5.75
 HUB    12.59   315.33   186.78   254.06  1094.59     0.29     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   332.15   308.41   178.73     0.28  2753.84     0.92     0.91
 MEAN  286.93   284.64   131.13     0.26  2415.94     0.92     0.91     0.91     1.46
 HUB   233.10   258.25    46.32     0.24  2352.62     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     7.88     1.05     7.50   514.57     1.02   507.60   486.00     0.78
 MEAN    7.83     1.05     7.44   513.57     1.01   506.48   485.46     0.81
 HUB     7.82     1.05     7.39   513.38     1.01   505.39   485.37     0.84

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    31.40    35.42    31.50     3.92     0.93     0.39     1.40
 MEAN   31.66    27.43    23.50     3.93     0.93     0.37     1.64
 HUB    36.32    10.33     6.50     3.83     0.93     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   328.4128   158.6647   287.5421  1094.3456     0.3001    -0.1968     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.8347    7.3661   505.1691   485.6094     0.8431    28.8898    33.0000     4.1102
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   295.6235    67.5059   287.8128  1096.1260     0.2697     0.0171     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.8318     7.4507   506.8135   485.5893   410.5396     0.0272     0.2991

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   287.5697     0.0000   287.5697  1096.5305     0.2623     0.2111     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.4651   507.1909   485.5774     0.0000     0.0600     0.0424     0.0532

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8740     7.8257     1.0475   513.8374     7.4628   262.1428     2.0321

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  46431.535       0.421      85.430  336209.719   0.107832E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1136   Tt4 =   513.8374   T1  =   461.4136

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    326114.63    600.0198     80.7181      1.3994      0.8552     13.8473     1.1136     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 25666 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.024   EfDer =  0.995    SH =  0.143364E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     41.065    1951.182       6.513     472.323       1.000       1.000       0.980
 W Kg/sec =  18.666  Wdry =  41.059  WH2O = 0.006  lbm/sec   H2O =   0.084g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     88.444    2044.727       1.381       0.249      53.353      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  67332.570   32219.582       3.212     831.557     258.914     619.754       2.394

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   194.33    -0.07   194.33     0.18     0.38   368.10
 MEAN    17.06     0.00    -0.02   194.33    -0.07   194.33     0.18     0.33
 HUB     12.51     0.00    -0.02   194.33    -0.07   194.33     0.18     0.27

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     61.05    50.47    10.58   351.27   401.50      6.36   469.29   461.23     4.29
 MEAN    56.22    47.20     9.02   290.49   349.55      6.36   469.29   461.23     4.29
 HUB     47.63    38.62     9.01   213.01   288.39      6.36   469.29   461.23     4.29

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   337.80   208.37   265.88  1061.11      0.32     7.29     6.52    16.04
 MEAN    18.04   350.56   226.35   267.69  1059.66      0.33     7.43     6.80    12.53
 HUB     15.00   391.42   282.66   270.76  1057.41      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    351.27   301.85   142.91     0.28  4299.95      0.92     0.91
 MEAN   307.10   279.60    80.75     0.26  4083.68      0.92     0.91     0.91     1.41
 HUB    255.41   272.13    27.25     0.26  4240.78      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.06     1.08     6.59   484.09     1.02   474.92   469.28     3.56
 MEAN     7.04     1.08     6.53   483.50     1.02   473.62   468.91     3.73
 HUB      7.06     1.08     6.43   483.93     1.02   471.62   469.25     4.02

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.09    28.26    24.20     4.06     0.93     0.39     1.80
 MEAN    40.22    16.79    12.70     4.09     0.93     0.35     2.22
 HUB     46.23    -5.75    -9.30     3.55     0.93     0.23     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.995       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   365.4806   225.9149   287.2952  1059.0789     0.3451    -0.0601     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     7.0473     6.4969   473.1054   469.1504     3.8147    38.1798    35.4000    -2.7798

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   290.1944    70.9904   281.3773  1063.5082     0.2729     0.3319     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     7.0449     6.6942   477.0732   469.0620   554.9116     0.0145     0.4328

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   288.0711     0.0000   288.0711  1063.6115     0.2708     0.3447     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     6.6866   477.1718   469.0469     0.0000     0.0600     0.0393     0.3178
```

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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8762     7.0316     1.0796   483.8418    11.5189   201.6011     1.5628

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  71662.883       0.581     166.301  420892.781   0.149537E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.179   EfDer =  1.000    SH =  0.154933E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     41.065    1951.182       7.032     483.842       1.000       1.000       0.980
 W Kg/sec =  18.666  Wdry =  41.058  WH2O = 0.006  lbm/sec   H2O =   0.095g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.913    2020.246       1.381       0.249      53.353      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64752.371   32219.434       2.433     590.487     242.726     468.502       1.930

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   263.18    -0.09   263.18     0.25     0.41   362.29
 MEAN    18.08     0.00    -0.02   263.18    -0.09   263.18     0.25     0.38
 HUB     15.21     0.00    -0.02   263.18    -0.09   263.18     0.25     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.06     46.36     6.70   349.91   437.91     6.74   478.27   469.04     3.31
 MEAN    49.48     42.30     7.18   307.82   405.06     6.74   478.27   469.04     3.31
 HUB     44.55     37.84     6.71   258.98   369.30     6.74   478.27   469.04     3.31

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   320.26   148.82   283.58  1071.10      0.30     2.33     2.04     9.02
 MEAN    18.01   326.94   160.81   284.65  1070.29      0.31     2.40     2.13     7.35
 HUB     15.22   353.49   207.90   285.90  1069.49      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    347.70   346.37   198.88     0.32  3040.75      0.92     0.91
 MEAN   306.66   319.84   145.85     0.30  2897.79      0.92     0.91     0.91     1.37
 HUB    259.21   290.46    51.31     0.27  3166.22      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.44     1.06     7.00   492.16     1.02   483.92   474.37     2.73
 MEAN     7.42     1.06     6.96   491.77     1.02   483.18   474.13     2.80
 HUB      7.46     1.06     6.92   492.51     1.02   482.46   474.62     2.87

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     27.69    35.04    31.50     3.54     0.93     0.33     1.40
 MEAN    29.46    27.13    23.50     3.63     0.93     0.33     1.63
 HUB     36.02    10.17     6.50     3.67     0.93     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   359.2011   161.2596   320.9685  1068.7241     0.3361    -0.1650     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.4353     6.8830   481.7785   474.3982     2.9373    26.6757    30.6000     3.9243

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   315.2218    66.8293   308.0562  1071.3660     0.2942     0.0920     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4329     7.0050   484.1623   474.3461   491.5697     0.0151     0.2521

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   326.4772     0.0000   326.4772  1070.7195     0.3049     0.1440     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9625	483.5818	474.3416	0.0000	0.0600	0.0419	0.0034

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8706	7.4200	1.0552	492.1482	8.3067	252.6154	1.9583

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
51684.289	0.428	119.939	387942.500	0.156938E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.265 EfDer = 0.994 SH = 0.159584E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
41.065	1951.182	7.420	492.148	1.000	1.000	0.980

W Kg/sec = 18.666 Wdry = 41.058 WH2O = 0.007 lbm/sec H2O = 0.101g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
79.245	2003.125	1.381	0.249	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62560.309	32219.375	2.351	545.479	231.988	424.468	1.830

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	275.25	-0.09	275.25	0.26	0.41	350.82
MEAN	17.74	0.00	-0.02	275.25	-0.09	275.25	0.26	0.38	
HUB	15.05	0.00	-0.02	275.25	-0.09	275.25	0.26	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.16	46.36	4.80	341.74	438.88	7.09	486.06	474.30	2.59
MEAN	47.67	43.40	4.27	302.04	408.72	7.09	486.06	474.30	2.59
HUB	42.96	38.84	4.12	256.26	376.14	7.09	486.06	474.30	2.59

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	323.27	127.67	296.99	1078.54	0.30	2.26	1.98	8.75
MEAN	17.51	330.77	144.31	297.63	1078.10	0.31	2.34	2.07	6.78
HUB	14.85	358.20	198.06	298.46	1077.68	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	337.31	363.53	209.64	0.34	2531.06	0.92	0.91		
MEAN	298.09	335.01	153.78	0.31	2528.00	0.92	0.91	0.91	1.31
HUB	252.86	303.45	54.79	0.28	2942.69	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.77	1.05	7.31	499.08	1.01	490.68	478.54	2.22
MEAN	7.77	1.05	7.28	499.07	1.01	490.27	478.54	2.25
HUB	7.83	1.05	7.26	500.20	1.02	489.89	479.24	2.27

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	23.26	35.22	31.50	3.72	0.93	0.27	1.40
MEAN	25.87	27.32	23.50	3.82	0.92	0.29	1.62
HUB	33.57	10.40	6.50	3.90	0.92	0.33	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	365.3934	145.2538	335.2815	1076.3812	0.3395	-0.1777	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.7842	7.1950	488.7182	478.7959	2.3687	23.4237	31.5000	8.0763

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	334.9804	73.0737	326.9130	1078.2666	0.3107	-0.0038	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.7786	7.2815	490.4298	478.7549	451.3937	0.0211	0.2102

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	340.8293	0.0000	340.8293	1077.9143	0.3162	0.0883	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.2470	490.1122	478.7353	0.0000	0.0600	0.0580	-0.0720

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8384	7.7599	1.0458	499.4477	7.2998	273.5561	2.1206

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
45422.605	0.399	105.408	390656.844	0.161491E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 1.675 EfDer = 0.973 SH = 0.164151E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
41.065	1951.182	7.760	499.448	1.000	1.000	0.980

W Kg/sec = 18.666 Wdry = 41.058 WH2O = 0.007 lbm/sec H2O = 0.107g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
76.333	1988.433	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60809.891	32219.318	2.297	513.330	223.468	395.845	1.771

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	284.31	-0.10	284.31	0.26	0.40	334.20
MEAN	16.97	0.00	-0.02	284.31	-0.10	284.31	0.26	0.38	
HUB	14.32	0.00	-0.02	284.31	-0.10	284.31	0.26	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.09	46.36	2.73	327.95	434.10	7.40	492.95	478.69	2.10
MEAN	45.48	43.80	1.68	288.96	405.45	7.40	492.95	478.69	2.10
HUB	40.63	37.84	2.79	243.83	374.61	7.40	492.95	478.69	2.10

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	323.36	104.34	306.06	1084.85	0.30	2.16	1.89	8.34
MEAN	16.57	330.18	123.07	306.38	1084.66	0.30	2.24	1.97	6.35
HUB	13.89	355.69	179.74	306.93	1084.49	0.33	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	321.47	375.26	217.13	0.35	1971.84	0.92	0.89		
MEAN	282.21	345.24	159.13	0.32	2041.46	0.92	0.89	0.89	1.26
HUB	236.51	312.14	56.77	0.29	2497.96	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.03	1.04	7.56	504.84	1.01	496.44	481.86	1.87
MEAN	8.04	1.04	7.55	505.03	1.01	496.27	481.97	1.88
HUB	8.11	1.04	7.53	506.28	1.01	496.12	482.71	1.89

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	18.82	35.35	31.50	3.85	0.93	0.22	1.40
MEAN	21.89	27.45	23.50	3.95	0.91	0.24	1.62
HUB	30.35	10.48	6.50	3.98	0.91	0.29	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.973	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	358.8385	123.7652	336.8193	1083.3096	0.3312	-0.1450	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0567	7.4747	495.0397	482.1978	1.9608	20.1760	32.4000	12.2240

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	343.2986	76.9919	334.5537	1084.2703	0.3166	-0.0658	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.0468	7.5135	495.9164	482.1674	432.2457	0.0292	0.1739

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	341.0775	0.0000	341.0775	1084.4022	0.3145	0.0346	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.4948	496.0384	482.1255	0.0000	0.0600	0.0822	-0.1023

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7669	8.0195	1.0335	505.3870	5.9397	314.7934	2.4403

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
36961.523	0.358	85.773	404697.938	0.166070E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-0.728 EfDer = 0.938 SH = 0.168891E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
41.065	1951.182	8.020	505.387	1.000	1.000	0.980

W Kg/sec = 18.666 Wdry = 41.058 WH2O = 0.007 lbm/sec H2O = 0.112g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
74.300	1976.714	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
59455.668	32219.258	2.343	509.668	217.518	384.739	1.769

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	279.97	-0.10	279.97	0.26	0.39	316.01
MEAN	15.91	0.00	-0.02	279.97	-0.10	279.97	0.26	0.36	
HUB	13.07	0.00	-0.02	279.97	-0.10	279.97	0.26	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	48.10	47.36	0.74	311.94	419.23	7.66	499.09	482.08	1.75
MEAN	44.07	44.80	-0.73	270.96	389.68	7.66	499.09	482.08	1.75
HUB	38.49	38.84	-0.35	222.55	357.71	7.66	499.09	482.08	1.75

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	314.94	89.05	302.09	1090.67	0.29	2.05	1.78	7.43
MEAN	15.50	320.25	105.45	302.39	1090.48	0.29	2.13	1.86	5.75
HUB	12.59	341.60	157.84	302.95	1090.30	0.31	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	305.47	371.61	216.41	0.34	1599.41	0.92	0.86		
MEAN	263.88	341.38	158.43	0.31	1635.76	0.92	0.86	0.86	1.23
HUB	214.37	308.18	56.53	0.28	1988.51	0.92	0.86		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.24	1.03	7.78	509.76	1.01	501.79	484.56	1.61
MEAN	8.24	1.03	7.77	509.86	1.01	501.62	484.62	1.62
HUB	8.29	1.03	7.75	510.83	1.01	501.45	485.17	1.63

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	16.43	35.62	31.50	4.12	0.93	0.19	1.40
MEAN	19.22	27.65	23.50	4.15	0.90	0.21	1.64
HUB	27.52	10.57	6.50	4.07	0.90	0.25	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.938	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	361.8074	107.3836	345.5045	1088.3141	0.3324	-0.2500	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2475	7.6476	499.6328	484.8044	1.7231	17.2654	33.0000	15.7346

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   358.9940    81.9766   349.5090  1088.4951     0.3298    -0.2782     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.2205     7.6316   499.7955   484.7602   410.5396     0.0752     0.1421

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   349.2418     0.0000   349.2418  1089.0994     0.3207     0.0015     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.6485   500.3503   484.7290     0.0000     0.0600     0.1055    -0.2436

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6735     8.2057     1.0232   510.1514     4.7648   367.2036     2.8465

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  29652.002       0.318      68.811  428747.406   0.170934E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0801   Tt4 =   510.1514   T1  =   472.3232

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    235383.31    546.2313     88.4438      1.2599      0.8218      9.0242      1.0801     37.3740
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*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 20047 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.395   EfDer =  0.998    SH =  0.285462E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     50.870    1792.407       7.939     487.555       1.000       1.000       0.980
  W Kg/sec =  23.123  Wdry =  50.856  WH2O = 0.015  lbm/sec   H2O =   0.198g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     91.317    1848.769       1.381       0.249      53.358      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  70721.133   39910.879       3.110     831.557     267.358     619.754       2.318

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   204.11    -0.07   204.11     0.19     0.36   332.83
 MEAN    17.06     0.00    -0.02   204.11    -0.07   204.11     0.19     0.31
 HUB     12.51     0.00    -0.02   204.11    -0.07   204.11     0.19     0.26

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.69    50.47     7.22   322.69   381.88     7.74   484.21   472.76     5.45
 MEAN    52.60    47.20     5.40   266.85   336.02     7.74   484.21   472.76     5.45
 HUB     43.80    38.62     5.18   195.68   282.81     7.74   484.21   472.76     5.45

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.80   170.75   282.16  1075.20      0.31     7.29     6.52    16.04
 MEAN    18.04   344.71   196.34   283.32  1074.36      0.32     7.43     6.80    12.53
 HUB     15.00   388.55   263.11   285.91  1072.63      0.36     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    322.69   320.46   151.94     0.30  3524.06      0.92     0.91
 MEAN   282.11   296.02    85.77     0.28  3542.39      0.92     0.91     0.91     1.27
 HUB    234.63   287.32    28.48     0.27  3947.46      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.43     1.06     7.90   496.41     1.02   487.67   478.51     4.90
 MEAN     8.43     1.06     7.86   496.46     1.02   486.91   478.57     5.03
 HUB      8.49     1.07     7.76   497.47     1.02   485.35   479.29     5.30

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.18    28.30    24.20     4.10     0.93     0.29     1.80
 MEAN    34.72    16.84    12.70     4.14     0.92     0.25     2.22
 HUB     42.62    -5.69    -9.30     3.61     0.92     0.15     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.998       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   361.8986   195.9587   304.2545  1073.6359     0.3371    -0.0744     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     8.4420     7.8116   486.2603   478.7998     5.1500    32.7840    35.4000     2.6160

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   309.3628    75.6796   299.9633  1076.7568     0.2873     0.2231     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     8.4396     7.9756   489.0931   478.6949   554.9116     0.0141     0.3451

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   307.0494     0.0000   307.0494  1076.8777     0.2851     0.2481     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     7.9680   489.2078   478.6761     0.0000     0.0600     0.0390     0.2108
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8717     8.4244     1.0611   496.7807     9.2258   224.0747     1.7370

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57433.105       0.552     165.104  509677.063   0.292932E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 2.959   EfDer =  0.985    SH =  0.299217E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
    50.870    1792.407       8.424     496.781       1.000       1.000       0.980
 W Kg/sec =  23.123  Wdry =  50.855  WH2O = 0.015  lbm/sec   H2O =   0.213g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    86.869    1831.523       1.381       0.249      53.358      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68969.898   39910.664       2.322     590.487     254.336     468.502       1.842

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   280.32    -0.10   280.32     0.26     0.40   328.44
 MEAN   18.08     0.00    -0.02   280.32    -0.10   280.32     0.26     0.37
 HUB    15.21     0.00    -0.02   280.32    -0.10   280.32     0.26     0.34

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    48.92     46.36     2.56   321.44   426.57     8.04   490.47   478.65     4.59
 MEAN   45.26     42.30     2.96   282.77   398.24     8.04   490.47   478.65     4.59
 HUB    40.33     37.84     2.49   237.91   367.73     8.04   490.47   478.65     4.59

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP    20.42   322.96   104.34   305.64  1081.87      0.30     2.33     2.04     9.02
 MEAN   18.01   330.16   124.29   305.87  1081.76      0.31     2.40     2.13     7.35
 HUB    15.22   356.58   182.51   306.33  1081.65      0.33     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   319.40   373.72   215.06     0.35  2132.61      0.92     0.90
 MEAN  281.71   344.00   157.41     0.32  2240.27      0.92     0.90     0.90     1.24
 HUB   238.11   311.34    55.60     0.29  2779.88      0.92     0.90

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     8.73     1.04     8.21   502.14     1.01   493.76   481.94     4.12
 MEAN    8.74     1.04     8.20   502.41     1.01   493.65   482.11     4.13
 HUB     8.82     1.05     8.19   503.77     1.01   493.55   482.95     4.14

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    18.85    35.13    31.50     3.63     0.93     0.21     1.40
 MEAN   22.11    27.23    23.50     3.73     0.91     0.23     1.63
 HUB    30.79    10.29     6.50     3.79     0.91     0.28     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.985       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   367.2188   124.6425  345.4185  1079.8727     0.3401    -0.1955     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.7557     8.0909   491.9405   482.3877     4.3696    19.8417    30.6000    10.7583

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   341.2077    72.3385   333.4514  1081.4988     0.3155    -0.0500     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     8.7464     8.1708   493.4204   482.3230   491.5697     0.0266     0.1575

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   354.0768     0.0000   354.0768  1080.7083     0.3276     0.0189     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1035	492.7018	482.3155	0.0000	0.0600	0.0730	-0.1696

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7932	8.7203	1.0351	502.7715	5.9910	305.8755	2.3711

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
37299.227	0.366	107.225	472679.750	0.301475E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =-0.420 EfDer = 0.943 SH = 0.304381E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
50.870	1792.407	8.720	502.771	1.000	1.000	0.980

W Kg/sec = 23.123 Wdry = 50.855 WH2O = 0.015 lbm/sec H2O = 0.220g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
84.426	1820.579	1.381	0.249	53.358	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
67697.500	39910.586	2.207	545.479	247.185	424.468	1.717

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	297.86	-0.10	297.86	0.27	0.40	318.85
MEAN	17.74	0.00	-0.02	297.86	-0.10	297.86	0.27	0.38	
HUB	15.05	0.00	-0.02	297.86	-0.10	297.86	0.27	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	46.51	46.36	0.15	313.93	432.82	8.28	495.65	482.23	3.90
MEAN	42.98	43.40	-0.42	277.46	407.14	8.28	495.65	482.23	3.90
HUB	38.33	38.84	-0.51	235.41	379.71	8.28	495.65	482.23	3.90

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	335.12	78.95	325.69	1086.16	0.31	2.26	1.98	8.75
MEAN	17.51	341.80	104.73	325.36	1086.50	0.31	2.34	2.07	6.78
HUB	14.85	367.90	171.67	325.40	1086.84	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	309.86	399.24	230.92	0.37	1565.96	0.92	0.86		
MEAN	273.83	366.68	169.10	0.34	1835.29	0.92	0.86	0.86	1.18
HUB	232.28	331.00	60.61	0.30	2550.80	0.92	0.86		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.94	1.02	8.37	506.71	1.01	497.69	484.56	3.66
MEAN	8.97	1.03	8.39	507.38	1.01	498.00	484.96	3.62
HUB	9.07	1.04	8.39	509.18	1.01	498.31	486.02	3.57

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	13.63	35.34	31.50	3.84	0.93	0.14	1.40
MEAN	17.84	27.46	23.50	3.96	0.90	0.18	1.62
HUB	27.81	10.55	6.50	4.05	0.90	0.24	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.943	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	382.1664	105.4175	367.3394	1084.3396	0.3524	-0.2100	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.9880	8.2576	496.0262	485.2428	3.8521	16.0122	31.5000	15.4878

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	369.3477	80.5707	360.4526	1085.1892	0.3404	-0.1554	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.9701	8.2879	496.7997	485.1917	451.3937	0.0392	0.1133

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   376.8034     0.0000   376.8034  1084.6998     0.3474    -0.0453     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2245   496.3528   485.1547     0.0000     0.0600     0.1039    -0.2591

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6650     8.9306     1.0241   507.7563     4.9850   347.8241     2.6963

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  31037.631       0.323      89.225  478580.594   0.306566E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =-3.510   EfDer =  0.883    SH =  0.309443E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     50.870    1792.407       8.931     507.756       1.000       1.000       0.980
 W Kg/sec =  23.123  Wdry =  50.855  WH2O = 0.016  lbm/sec   H2O =   0.226g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.846    1811.620       1.381       0.249      53.358      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66999.406   39910.504       2.116     513.330     242.560     395.845       1.632

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   313.25    -0.11   313.25     0.29     0.40   304.48
 MEAN    16.97     0.00    -0.02   313.25    -0.11   313.25     0.29     0.38
 HUB     14.32     0.00    -0.02   313.25    -0.11   313.25     0.29     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     43.89    46.36    -2.47   301.26   434.68     8.44   499.88   485.05     3.43
 MEAN    40.29    43.80    -3.51   265.45   410.66     8.44   499.88   485.05     3.43
 HUB     35.58    37.84    -2.26   223.99   385.15     8.44   499.88   485.05     3.43

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   345.75    51.55   341.89  1089.33     0.32     2.16     1.89     8.34
 MEAN    16.57   350.61    80.89   341.15  1090.04     0.32     2.24     1.97     6.35
 HUB     13.89   373.76   153.16   340.94  1090.72     0.34     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    295.32   419.89   243.77     0.39   975.29     0.92     0.81
 MEAN   259.24   384.96   178.36     0.35  1342.45     0.92     0.81     0.81     1.13
 HUB    217.26   346.91    64.11     0.32  2128.88     0.92     0.81

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.06     1.01     8.45   510.21     1.00   500.61   486.47     3.35
 MEAN     9.11     1.02     8.48   511.13     1.01   501.26   486.99     3.28
 HUB      9.21     1.03     8.50   513.11     1.01   501.89   488.11     3.20

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      8.57    35.49    31.50     3.99     0.93     0.08     1.40
 MEAN    13.34    27.60    23.50     4.10     0.89     0.12     1.62
 HUB     24.19    10.65     6.50     4.15     0.89     0.20     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.883       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   384.6544    81.3421   375.9554  1088.2306     0.3535    -0.1724     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.1177     8.3727   499.5972   487.2399     3.4506    12.2084    32.4000    20.1916

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   385.7287    86.5077   375.9030  1088.1622     0.3545    -0.2086     2.2705
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BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.0919	8.3449	499.5305	487.2065	432.2457	0.0501	0.0773

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	384.2361	0.0000	384.2361	1088.2634	0.3531	-0.0951	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.3018	499.6227	487.1301	0.0000	0.0600	0.1323	-0.2754

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.4538	9.0389	1.0121	511.4801	3.7240	430.6164	3.3381

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
23187.092	0.266	66.657	498555.781	0.311606E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-6.382 EfDer = 0.820 SH = 0.314625E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
50.870	1792.407	9.039	511.480	1.000	1.000	0.980

W Kg/sec = 23.123 Wdry = 50.854 WH2O = 0.016 lbm/sec H2O = 0.231g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
82.153	1805.014	1.381	0.249	53.358	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
66675.250	39910.422	2.119	509.668	240.533	384.739	1.600

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	313.97	-0.11	313.97	0.29	0.39	288.56
MEAN	15.91	0.00	-0.02	313.97	-0.11	313.97	0.29	0.37	
HUB	13.07	0.00	-0.02	313.97	-0.11	313.97	0.29	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	42.40	47.36	-4.96	286.56	425.15	8.54	503.56	487.01	3.06
MEAN	38.42	44.80	-6.38	248.91	400.73	8.54	503.56	487.01	3.06
HUB	33.08	38.84	-5.76	204.44	374.72	8.54	503.56	487.01	3.06

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	344.85	33.39	343.23	1092.40	0.32	2.05	1.78	7.43
MEAN	15.50	348.00	61.74	342.48	1093.19	0.32	2.13	1.86	5.75
HUB	12.59	366.90	132.04	342.32	1093.93	0.34	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	280.61	423.00	247.23	0.39	600.92	0.92	0.75		
MEAN	242.41	387.21	180.67	0.35	958.50	0.92	0.75	0.75	1.10
HUB	196.93	348.41	64.89	0.32	1663.77	0.92	0.75		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.11	1.01	8.51	512.99	1.00	503.44	487.88	3.07
MEAN	9.16	1.01	8.54	513.89	1.00	504.16	488.37	3.00
HUB	9.24	1.02	8.56	515.66	1.01	504.85	489.35	2.93

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	5.56	35.76	31.50	4.26	0.93	0.03	1.40
MEAN	10.22	27.81	23.50	4.31	0.87	0.08	1.64
HUB	21.09	10.73	6.50	4.23	0.87	0.16	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.820	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	397.9093	62.8693	392.9112	1090.2577	0.3650	-0.2853	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1568	8.3619	501.4636	488.6062	3.2593	9.0908	33.0000	23.9092

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   411.8700    94.0509   400.9879  1089.2764     0.3781    -0.4489     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.0976     8.2534   500.5551   488.5530   410.5396     0.1137     0.0508

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   400.4403     0.0000   400.4403  1090.0905     0.3673    -0.1033     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2798   501.3005   488.4997     0.0000     0.0600     0.1453    -0.4071

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.2234     9.0776     1.0043   514.1791     2.6993   546.8223     4.2389

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  16807.424       0.213      48.317  530684.063   0.316846E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0546   Tt4 =   514.1791   T1  =   487.5552

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    165764.47    476.5276     91.3174      1.1434      0.6893      5.3951      1.0546     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 15435 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 6.466   EfDer =  1.000    SH =  0.480206E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     49.710    1582.167       9.337     500.813       1.000       1.000       0.980
  W Kg/sec =  22.595  Wdry =  49.686  WH2O = 0.024  lbm/sec   H2O =   0.383g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.899    1610.175       1.380       0.249      53.364      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60040.625   38997.648       3.693     831.557     225.177     619.754       2.752

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   173.29    -0.06   173.29     0.16     0.31   289.87
 MEAN    17.06     0.00    -0.02   173.29    -0.06   173.29     0.16     0.27
 HUB     12.51     0.00    -0.02   173.29    -0.06   173.29     0.16     0.23

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.69    50.47     8.22   284.84   333.46     9.18   498.40   482.36     6.12
 MEAN    53.67    47.20     6.47   235.55   292.47     9.18   498.40   482.36     6.12
 HUB     44.92    38.62     6.30   172.73   244.71     9.18   498.40   482.36     6.12

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   286.13   155.80   239.99  1090.11      0.26     7.29     6.52    16.04
 MEAN    18.04   298.46   176.32   240.80  1089.40      0.27     7.43     6.80    12.53
 HUB     15.00   335.12   231.35   242.45  1088.07      0.31     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    284.84   272.48   129.04     0.25  3215.33      0.92     0.91
 MEAN   249.02   251.54    72.70     0.23  3181.21      0.92     0.91     0.91     1.30
 HUB    207.11   243.66    24.25     0.22  3471.05      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.79     1.05     9.33   507.94     1.01   501.37   486.78     5.63
 MEAN     9.78     1.05     9.29   507.86     1.01   500.71   486.76     5.75
 HUB      9.82     1.05     9.20   508.51     1.02   499.49   487.23     5.97

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     32.99    28.27    24.20     4.07     0.93     0.31     1.80
 MEAN    36.21    16.80    12.70     4.10     0.93     0.28     2.22
 HUB     43.66    -5.71    -9.30     3.59     0.93     0.17     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       1.000       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   312.4942   175.9819   258.2306  1088.9086     0.2870    -0.0701     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     9.7911     9.2541   500.2648   486.9299     5.8338    34.2741    35.4000     1.1259

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   263.3908    64.4334   255.3881  1091.3743     0.2413     0.2503     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     9.7904     9.4067   502.5345   486.8222   554.9116     0.0114     0.3650

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   261.3514     0.0000   261.3514  1091.4628     0.2395     0.2711     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.3997   502.6204   486.8069     0.0000     0.0600     0.0370     0.2369
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8771     9.7770     1.0471   508.1025     7.2902   217.3152     1.6846

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  45420.363       0.560     127.593  485533.563   0.490412E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.941   EfDer =  0.992    SH =  0.498929E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.710    1582.167       9.777     508.103       1.000       1.000       0.980
 W Kg/sec =  22.595  Wdry =  49.685  WH2O = 0.025  lbm/sec   H2O =   0.406g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.973    1598.581       1.380       0.249      53.364      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58828.102   38997.359       2.726     590.487     216.611     468.502       2.163

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   239.10    -0.08   239.10     0.22     0.34   286.67
 MEAN    18.08     0.00    -0.02   239.10    -0.08   239.10     0.22     0.32
 HUB     15.21     0.00    -0.02   239.10    -0.08   239.10     0.22     0.29

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.89    46.36     3.53   283.73   371.11     9.46   503.51   486.79     5.38
 MEAN    46.24    42.30     3.94   249.61   345.71     9.46   503.51   486.79     5.38
 HUB     41.30    37.84     3.46   210.00   318.29     9.46   503.51   486.79     5.38

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   279.17    98.39   261.26  1095.45     0.25     2.33     2.04     9.02
 MEAN    18.01   285.41   114.33   261.51  1095.26     0.26     2.40     2.13     7.35
 HUB     15.22   308.39   162.84   261.89  1095.09     0.28     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    281.94   319.29   183.55     0.29  2010.72     0.92     0.91
 MEAN   248.66   294.00   134.34     0.27  2060.49     0.92     0.91     0.91     1.27
 HUB    210.18   266.14    47.35     0.24  2480.09     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.06     1.03     9.62   512.56     1.01   506.30   489.41     4.94
 MEAN    10.07     1.03     9.61   512.67     1.01   506.13   489.49     4.97
 HUB     10.13     1.04     9.59   513.60     1.01   505.97   490.06     4.99

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     20.64    35.09    31.50     3.59     0.93     0.23     1.40
 MEAN    23.61    27.19    23.50     3.69     0.92     0.25     1.63
 HUB     31.87    10.25     6.50     3.75     0.92     0.29     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.992       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   315.9296   114.6465   294.3937  1093.9612     0.2888    -0.1855     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
  10.0825     9.5228   504.9318   489.7029     5.1520    21.2776    30.6000     9.3224

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   291.0976    61.7148   284.4804  1095.2732     0.2658    -0.0179     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500    10.0778     9.6013   506.1415   489.6407   491.5697     0.0200     0.1761

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   301.4290     0.0000   301.4290  1094.7389     0.2753     0.0438     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.5474	505.6502	489.6387	0.0000	0.0600	0.0646	-0.1310

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8185	10.0565	1.0286	512.9421	4.8396	292.4637	2.2672

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
30155.584	0.379	84.712	449813.875	0.501972E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 0.477 EfDer = 0.957 SH = 0.505905E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.710	1582.167	10.056	512.942	1.000	1.000	0.980

W Kg/sec = 22.595 Wdry = 49.685 WH2O = 0.025 lbm/sec H2O = 0.418g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.259	1591.022	1.380	0.249	53.365	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
57911.512	38997.254	2.578	545.479	211.594	424.468	2.006

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	254.80	-0.09	254.80	0.23	0.34	278.65
MEAN	17.74	0.00	-0.02	254.80	-0.09	254.80	0.23	0.32	
HUB	15.05	0.00	-0.02	254.80	-0.09	254.80	0.23	0.30	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	47.41	46.36	1.05	277.11	376.51	9.69	507.73	489.56	4.76
MEAN	43.88	43.40	0.48	244.92	353.48	9.69	507.73	489.56	4.76
HUB	39.21	38.84	0.37	207.80	328.84	9.69	507.73	489.56	4.76

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	288.90	76.17	278.68	1098.99	0.26	2.26	1.98	8.75
MEAN	17.51	295.04	97.17	278.58	1099.14	0.27	2.34	2.07	6.78
HUB	14.85	318.10	153.38	278.68	1099.30	0.29	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	273.52	341.48	197.35	0.31	1510.70	0.92	0.88		
MEAN	241.71	313.85	144.54	0.29	1702.66	0.92	0.88	0.88	1.20
HUB	205.03	283.43	51.65	0.26	2279.01	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.27	1.02	9.79	516.29	1.01	509.59	491.48	4.50
MEAN	10.29	1.02	9.80	516.72	1.01	509.73	491.72	4.48
HUB	10.37	1.03	9.80	517.99	1.01	509.87	492.47	4.46

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	15.29	35.30	31.50	3.80	0.93	0.16	1.40
MEAN	19.23	27.42	23.50	3.92	0.90	0.20	1.62
HUB	28.83	10.50	6.50	4.00	0.90	0.26	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.957	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	328.3019	97.8074	313.3941	1097.6493	0.2991	-0.1996	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3065	9.6944	508.3495	491.9494	4.6733	17.3327	31.5000	14.1673

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	314.9732	68.7093	307.3877	1098.3950	0.2868	-0.1221	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.2959	9.7321	509.0375	491.9045	451.3937	0.0304	0.1304

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   320.6797     0.0000   320.6797  1098.0795     0.2920    -0.0227     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6805   508.7464   491.8766     0.0000     0.0600     0.0950    -0.2221

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.7088    10.2626     1.0205   516.9990     4.0571   331.1993     2.5674

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  25281.209       0.338      71.019  455880.500   0.508749E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =-2.639   EfDer =  0.902    SH =  0.512608E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     49.710    1582.167      10.263     516.999       1.000       1.000       0.980
 W Kg/sec =  22.595  Wdry =  49.685  WH2O = 0.025  lbm/sec   H2O =   0.428g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     71.087    1584.767       1.380       0.249      53.365      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57350.238   38997.156       2.466     513.330     208.165     395.845       1.902

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   268.13    -0.09   268.13     0.24     0.34   266.35
 MEAN    16.97     0.00    -0.02   268.13    -0.09   268.13     0.24     0.32
 HUB     14.32     0.00    -0.02   268.13    -0.09   268.13     0.24     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     44.77    46.36    -1.59   265.92   377.70     9.85   511.23   491.78     4.31
 MEAN    41.16    43.80    -2.64   234.31   356.15     9.85   511.23   491.78     4.31
 HUB     36.42    37.84    -1.42   197.72   333.20     9.85   511.23   491.78     4.31

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   296.91    52.51   292.23  1101.71     0.27     2.16     1.89     8.34
 MEAN    16.57   301.73    76.45   291.88  1102.12     0.27     2.24     1.97     6.35
 HUB     13.89   322.41   137.07   291.82  1102.53     0.29     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    260.68   358.80   208.17     0.33   993.12     0.92     0.82
 MEAN   228.84   329.26   152.38     0.30  1268.72     0.92     0.82     0.82     1.15
 HUB    191.78   296.90    54.71     0.27  1905.27     0.92     0.82

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.39     1.01     9.89   519.20     1.00   512.13   493.02     4.19
 MEAN    10.43     1.02     9.91   519.81     1.01   512.50   493.36     4.14
 HUB     10.52     1.02     9.92   521.22     1.01   512.88   494.15     4.09

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     10.19    35.46    31.50     3.96     0.93     0.10     1.40
 MEAN    14.68    27.57    23.50     4.07     0.89     0.14     1.62
 HUB     25.16    10.62     6.50     4.12     0.89     0.21     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.902       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   329.7492    76.8848   320.6607  1100.8795     0.2995    -0.1641     2.1803

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.4413     9.8195   511.3513   493.5552     4.2885    13.4833    32.4000    18.9167

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   328.3388    73.6368   319.9750  1100.9626     0.2982    -0.1769     2.2705
```

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.4249	9.8093	511.4256	493.5310	432.2457	0.0403	0.0936

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	326.6136	0.0000	326.6136	1101.0605	0.2966	-0.0762	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.7721	511.5163	493.4676	0.0000	0.0600	0.1255	-0.2454

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.5221	10.3788	1.0113	520.0768	3.0780	405.4368	3.1429

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
19180.783	0.282	53.882	475180.688	0.515355E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-5.506 EfDer = 0.839 SH = 0.519332E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.710	1582.167	10.379	520.077	1.000	1.000	0.980

W Kg/sec = 22.595 Wdry = 49.684 WH2O = 0.026 lbm/sec H2O = 0.436g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.500	1580.071	1.380	0.249	53.365	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
57041.832	38997.051	2.469	509.668	206.447	384.739	1.864

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	268.61	-0.09	268.61	0.24	0.33	252.60
MEAN	15.91	0.00	-0.02	268.61	-0.09	268.61	0.24	0.31	
HUB	13.07	0.00	-0.02	268.61	-0.09	268.61	0.24	0.29	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	43.29	47.36	-4.07	252.94	369.02	9.97	514.29	493.36	3.95
MEAN	39.29	44.80	-5.51	219.71	347.08	9.97	514.29	493.36	3.95
HUB	33.91	38.84	-4.93	180.46	323.65	9.97	514.29	493.36	3.95

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	295.28	36.84	292.97	1104.31	0.27	2.05	1.78	7.43
MEAN	15.50	298.65	59.76	292.61	1104.77	0.27	2.13	1.86	5.75
HUB	12.59	315.68	118.53	292.58	1105.21	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	247.70	360.96	210.86	0.33	662.63	0.92	0.77		
MEAN	213.98	330.76	154.21	0.30	927.64	0.92	0.77	0.77	1.12
HUB	173.83	297.76	55.30	0.27	1493.51	0.92	0.77		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.46	1.01	9.96	521.55	1.00	514.55	494.18	3.92
MEAN	10.49	1.01	9.98	522.13	1.00	514.97	494.49	3.86
HUB	10.56	1.02	9.99	523.39	1.01	515.39	495.18	3.81

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	7.17	35.74	31.50	4.24	0.93	0.06	1.40
MEAN	11.54	27.79	23.50	4.29	0.87	0.10	1.64
HUB	22.05	10.70	6.50	4.20	0.87	0.17	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.839	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	339.5083	60.8576	334.0093	1102.7614	0.3079	-0.2727	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.4955	9.8366	513.1051	494.6881	4.0802	10.3262	33.0000	22.6738

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   348.3787    79.5526   339.1741  1102.2400     0.3161    -0.3988     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4563     9.7660   512.6152   494.6588   410.5396     0.0940     0.0656

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   339.2462     0.0000   339.2462  1102.7836     0.3076    -0.0906     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.7768   513.1190   494.6032     0.0000     0.0600     0.1424    -0.3783

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.3140    10.4307     1.0050   522.3544     2.2777   506.7790     3.9285

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  14194.210       0.231      39.874  506347.438   0.522120E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0430   Tt4 =   522.3544   T1  =   500.8125

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    134232.14    377.0799     76.8988      1.1171      0.7204      6.4662      1.0430     37.3740
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50µm, ISA +36R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 39000 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.098   EfDer =  0.958    SH =  0.105546E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     26.369    2465.203       4.265     477.915       1.000       1.000       0.980
  W Kg/sec =  11.986  Wdry =  26.367  WH2O = 0.003  lbm/sec   H2O =   0.040g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     87.249    2568.224       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66781.359   20689.877       3.256     831.557     255.398     619.754       2.427

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   192.74    -0.07   192.74     0.18     0.46   462.35
 MEAN    17.06     0.00    -0.02   192.74    -0.07   192.74     0.18     0.39
 HUB     12.51     0.00    -0.02   192.74    -0.07   192.74     0.18     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.53    50.47    16.06   443.81   483.92      4.17   474.93   460.68     1.61
 MEAN    62.30    47.20    15.10   367.01   414.60      4.17   474.93   460.68     1.61
 HUB     54.40    38.62    15.78   269.13   331.08      4.17   474.93   460.68     1.61

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   398.80   304.13   257.97  1074.42      0.37     7.29     6.52    16.04
 MEAN    18.04   404.25   308.40   261.36  1071.30      0.38     7.43     6.80    12.53
 HUB     15.00   438.81   348.93   266.09  1067.45      0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    443.81   293.36   139.69     0.27  6275.51      0.92     0.88
 MEAN   388.01   273.22    79.61     0.26  5563.44      0.92     0.88     0.88     1.74
 HUB    322.69   267.38    26.23     0.25  5234.73      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.91     1.15     4.47   499.63     1.05   486.84   473.19     1.11
 MEAN     4.84     1.13     4.39   497.16     1.04   484.02   471.88     1.23
 HUB      4.80     1.13     4.28   496.03     1.04   480.54   471.30     1.39

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.69    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    49.72    16.94    12.70     4.24     0.95     0.51     2.22
 HUB     52.67    -5.63    -9.30     3.67     0.95     0.38     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.958       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   416.3300   307.8007   280.3380  1070.9047     0.3888    -0.0371     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8446     4.3708   483.6684   472.1181     1.2516    47.6734    35.4000   -12.2734

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   278.2403    68.0661   269.7863  1079.4044     0.2578     0.5067     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8332     4.6177   491.3810   471.9942   554.9116     0.0344     0.5989

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   277.0504     0.0000   277.0504  1079.4501     0.2567     0.4793     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.5979	491.4340	471.9433	0.0000	0.0600	0.0825	0.4646

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8207	4.8106	1.1280	497.6056	19.6912	169.7270	1.3157

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
122454.984	0.622	182.477	267739.344	0.117223E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =14.632 EfDer = 0.961 SH = 0.128656E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.369	2465.203	4.811	497.605	1.000	1.000	0.980

W Kg/sec = 11.986 Wdry = 26.366 WH2O = 0.003 lbm/sec H2O = 0.052g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.923	2516.912	1.381	0.248	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62316.125	20689.689	2.556	590.487	231.033	468.502	2.028

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	253.28	-0.09	253.28	0.23	0.47	451.35
MEAN	18.08	0.00	-0.02	253.28	-0.09	253.28	0.23	0.43	
HUB	15.21	0.00	-0.02	253.28	-0.09	253.28	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.20	46.36	13.84	442.09	509.58	4.63	492.45	471.96	1.05
MEAN	56.93	42.30	14.63	388.92	464.19	4.63	492.45	471.96	1.05
HUB	52.27	37.84	14.43	327.21	413.85	4.63	492.45	471.96	1.05

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	366.90	252.02	266.64	1093.80	0.34	2.33	2.04	9.02
MEAN	18.01	367.03	249.35	269.32	1091.33	0.34	2.40	2.13	7.35
HUB	15.22	389.61	278.66	272.30	1088.90	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	439.29	325.84	187.28	0.30	5148.03	0.92	0.88		
MEAN	387.45	302.66	138.10	0.28	4492.37	0.92	0.88	0.88	1.69
HUB	327.49	276.64	48.84	0.25	4243.29	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.38	1.12	4.98	515.41	1.04	504.59	481.15	0.71
MEAN	5.31	1.10	4.91	513.15	1.03	502.32	480.04	0.77
HUB	5.28	1.10	4.84	512.28	1.03	500.08	479.63	0.82

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	43.38	35.08	31.50	3.58	0.93	0.54	1.40
MEAN	42.79	27.15	23.50	3.65	0.95	0.51	1.63
HUB	45.66	10.17	6.50	3.67	0.95	0.50	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.961	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	393.0236	250.0506	303.2198	1090.1024	0.3605	-0.1096	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3184	4.8671	501.1960	480.2782	0.7965	39.5107	30.6000	-8.9107

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	293.3853	62.1998	286.7162	1096.0637	0.2677	0.3568	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.3126	5.0578	506.6945	480.2021	491.5697	0.0241	0.4545

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	304.0901	0.0000	304.0901	1095.4967	0.2776	0.3484	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0243	506.1803	480.1688	0.0000	0.0600	0.0623	0.2754

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8372	5.2969	1.1011	513.6141	16.0092	191.4622	1.4842

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
99578.008	0.516	148.387	243172.703	0.133220E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.647 EfDer = 0.976 SH = 0.139335E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.369	2465.203	5.297	513.614	1.000	1.000	0.980

W Kg/sec = 11.986 Wdry = 26.366 WH2O = 0.004 lbm/sec H2O = 0.061g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.821	2477.378	1.381	0.248	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
58412.004	20689.604	2.559	545.479	213.175	424.468	1.991

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	257.00	-0.09	257.00	0.23	0.46	433.88
MEAN	17.74	0.00	-0.02	257.00	-0.09	257.00	0.23	0.42	
HUB	15.05	0.00	-0.02	257.00	-0.09	257.00	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.24	46.36	12.88	431.76	502.54	5.10	508.30	480.16	0.68
MEAN	56.05	43.40	12.65	381.61	460.15	5.10	508.30	480.16	0.68
HUB	51.57	38.84	12.73	323.77	413.44	5.10	508.30	480.16	0.68

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	358.78	235.65	270.54	1109.73	0.32	2.26	1.98	8.75
MEAN	17.51	360.88	236.14	272.89	1107.62	0.33	2.34	2.07	6.78
HUB	14.85	385.41	269.53	275.49	1105.55	0.35	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	426.17	330.89	190.52	0.30	4669.99	0.92	0.89		
MEAN	376.62	306.92	140.47	0.28	4135.65	0.92	0.89	0.89	1.64
HUB	319.47	279.98	49.94	0.25	4003.83	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.86	1.11	5.45	529.77	1.03	519.42	487.86	0.49
MEAN	5.79	1.09	5.38	527.92	1.03	517.45	487.02	0.52
HUB	5.77	1.09	5.31	527.46	1.03	515.52	486.83	0.55

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.06	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	40.87	27.24	23.50	3.74	0.94	0.49	1.62
HUB	44.37	10.27	6.50	3.77	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	388.0459	237.6942	306.7264	1106.3510	0.3507	-0.1173	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.8024	5.3351	516.2780	487.2395	0.5378	37.7735	31.5000	-6.2735

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	301.8628	65.8493	294.5930	1111.4586	0.2716	0.3051	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7988	5.5127	521.0574	487.1834	451.3937	0.0187	0.4293

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	306.9557	0.0000	306.9557	1111.1815	0.2762	0.3330	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4907	520.8081	487.1536	0.0000	0.0600	0.0498	0.2531

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8574	5.7856	1.0923	528.3813	14.7681	196.9079	1.5264

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
91873.766	0.506	136.906	241654.953	0.144221E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.061 EfDer = 0.986 SH = 0.151090E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.369	2465.203	5.786	528.381	1.000	1.000	0.980

W Kg/sec = 11.986 Wdry = 26.365 WH2O = 0.004 lbm/sec H2O = 0.070g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
67.621	2442.514	1.381	0.249	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54973.957	20689.508	2.593	513.330	197.959	395.845	2.000

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	257.02	-0.09	257.02	0.23	0.44	410.51
MEAN	16.97	0.00	-0.02	257.02	-0.09	257.02	0.23	0.40	
HUB	14.32	0.00	-0.02	257.02	-0.09	257.02	0.23	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.19	46.36	11.83	414.34	487.66	5.58	523.07	487.15	0.47
MEAN	54.86	43.80	11.06	365.09	446.56	5.58	523.07	487.15	0.47
HUB	50.17	37.84	12.33	308.07	401.27	5.58	523.07	487.15	0.47

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	345.49	215.83	269.78	1123.98	0.31	2.16	1.89	8.34
MEAN	16.57	347.53	216.46	271.89	1122.09	0.31	2.24	1.97	6.35
HUB	13.89	370.50	249.17	274.20	1120.22	0.33	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	406.16	330.16	190.33	0.29	4076.64	0.92	0.90		
MEAN	356.55	305.86	140.09	0.27	3589.08	0.92	0.90	0.90	1.60
HUB	298.81	278.65	49.64	0.25	3462.30	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.31	1.09	5.91	542.48	1.03	532.88	493.46	0.36
MEAN	6.24	1.08	5.85	540.79	1.02	531.09	492.73	0.38
HUB	6.23	1.08	5.78	540.35	1.02	529.32	492.55	0.40

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.66	35.20	31.50	3.70	0.93	0.48	1.40
MEAN	38.52	27.26	23.50	3.76	0.94	0.46	1.62
HUB	42.26	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.986	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	369.1813	217.6769	298.1805	1121.1925	0.3293	-0.0929	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.2541	5.8074	530.2546	492.9103	0.3888	36.1301	32.4000	-3.7301

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   299.4664    67.1616   291.8381  1125.1438     0.2662     0.2680     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2522     5.9557   534.0009   492.8733   432.2457     0.0146     0.4079

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   297.0705     0.0000   297.0705  1125.2546     0.2640     0.3187     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9498   534.1156   492.8458     0.0000     0.0600     0.0414     0.2537

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8705     6.2411     1.0787   541.2076    12.8271   212.2879     1.6456

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  79813.898       0.484     118.935  247230.609   0.156484E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.609   EfDer =  0.993    SH =  0.164706E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.369    2465.203       6.241     541.207       1.000       1.000       0.980
 W Kg/sec =  11.986  Wdry =  26.365  WH2O = 0.004  lbm/sec   H2O =   0.080g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     63.442    2413.397       1.381       0.249      53.354      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  52043.051   20689.396       2.744     509.668     185.729     384.739       2.072

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   245.07    -0.08   245.07     0.22     0.41   385.82
 MEAN    15.91     0.00    -0.02   245.07    -0.08   245.07     0.22     0.37
 HUB     13.07     0.00    -0.02   245.07    -0.08   245.07     0.22     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.13    47.36    10.77   394.12   464.17      6.04   536.38   492.84     0.35
 MEAN    54.41    44.80     9.61   342.34   421.08      6.04   536.38   492.84     0.35
 HUB     48.93    38.84    10.09   281.17   373.05      6.04   536.38   492.84     0.35

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   328.03   202.80   257.83  1136.80      0.29     2.05     1.78     7.43
 MEAN    15.50   327.17   198.73   259.90  1134.84      0.29     2.13     1.86     5.75
 HUB     12.59   344.34   223.33   262.09  1132.90      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    385.94   316.26   183.15     0.28  3639.71      0.92     0.91
 MEAN   333.40   292.71   134.67     0.26  3081.21      0.92     0.91     0.91     1.59
 HUB    270.85   266.37    47.52     0.24  2812.86      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.73     1.08     6.36   553.79     1.02   545.14   498.20     0.28
 MEAN     6.66     1.07     6.29   551.86     1.02   543.26   497.40     0.30
 HUB      6.62     1.06     6.21   550.93     1.02   541.40   497.02     0.31

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.19    35.39    31.50     3.89     0.93     0.47     1.40
 MEAN    37.40    27.39    23.50     3.89     0.94     0.45     1.64
 HUB     40.43    10.28     6.50     3.78     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   358.4105   202.3760   295.8074  1133.3743     0.3162    -0.1732     2.0437
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    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6612     6.2208   541.8729   497.5355     0.3093    34.3779    33.0000    -1.3779

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   302.3251    69.0362   294.3373  1136.4827     0.2660     0.1497     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6592     6.3437   544.8504   497.5067   410.5396     0.0252     0.3837

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   294.0803     0.0000   294.0803  1136.8855     0.2587     0.3070     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3560   545.2454   497.4948     0.0000     0.0600     0.0373     0.1819

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8794     6.6546     1.0662   552.1942    10.9873   231.9502     1.7981

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  68379.039       0.459     101.896  259186.359   0.170960E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1554   Tt4 =   552.1942   T1  =   477.9153

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    462099.69    688.6019     87.2487      1.5604      0.8405     15.0976      1.1554     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 38334 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.208   EfDer =  0.957    SH =  0.101719E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.397    2387.630       4.199     471.471       1.000       1.000       0.980
  W Kg/sec =  11.544  Wdry =  25.394  WH2O = 0.003  lbm/sec   H2O =   0.039g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     84.761    2504.352       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64376.887   19926.633       3.351     831.557     248.115     619.754       2.498

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
  TIP     20.63     0.00    -0.02   185.80    -0.06   185.80     0.18     0.44   450.85
  MEAN    17.06     0.00    -0.02   185.80    -0.06   185.80     0.18     0.38
  HUB     12.51     0.00    -0.02   185.80    -0.06   185.80     0.18     0.30

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
  TIP     66.63    50.47    16.16   429.85   468.34     4.11   468.70   456.90     2.02
  MEAN    62.41    47.20    15.21   355.47   401.15     4.11   468.69   456.90     2.02
  HUB     54.52    38.62    15.90   260.66   320.15     4.11   468.70   456.90     2.02

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
  TIP     20.63   386.15   294.91   249.27  1066.71      0.36     7.29     6.52    16.04
  MEAN    18.04   391.24   298.96   252.38  1063.77      0.37     7.43     6.80    12.53
  HUB     15.00   424.29   337.83   256.70  1060.14      0.40     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
  TIP    429.85   283.45   134.94     0.27  6085.30      0.92     0.88
  MEAN   375.80   263.82    76.84     0.25  5393.10      0.92     0.88     0.88     1.74
  HUB    312.54   257.95    25.29     0.24  5068.24      0.92     0.88

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
  TIP      4.80     1.14     4.39   491.86     1.04   479.87   469.26     1.40
  MEAN     4.73     1.13     4.32   489.54     1.04   477.23   467.95     1.54
  HUB      4.70     1.12     4.21   488.46     1.04   473.98   467.37     1.74

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
  TIP     49.79    28.43    24.20     4.23     0.93     0.57     1.80
  MEAN    49.83    16.93    12.70     4.23     0.95     0.51     2.22
  HUB     52.77    -5.63    -9.30     3.67     0.95     0.38     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.957       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   402.8457   298.3769   270.6582  1063.3964     0.3788    -0.0371     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.7408     4.2992   476.9044   468.1924     1.5741    47.7888    35.4000   -12.3888

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   269.1416    65.8402   260.9641  1071.4170     0.2512     0.5080     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.7304     4.5298   484.1295   468.0731   554.9116     0.0338     0.5996

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   267.9661     0.0000   267.9661  1071.4619     0.2501     0.4793     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.5108   484.1801   468.0276     0.0000     0.0600     0.0832     0.4645
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8194     4.7088     1.1214   489.9540    18.4835   169.2512     1.3120

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 114940.055       0.622     164.960  260276.719   0.112096E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.660   EfDer =  0.961    SH =  0.122264E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.397    2387.630       4.709     489.954       1.000       1.000       0.980
 W Kg/sec =  11.544  Wdry =  25.393  WH2O = 0.003  lbm/sec   H2O =   0.050g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     77.056    2456.674       1.381       0.248      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60290.094   19926.471       2.618     590.487     225.565     468.502       2.077

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   245.05    -0.08   245.05     0.23     0.46   440.55
 MEAN    18.08     0.00    -0.02   245.05    -0.08   245.05     0.23     0.42
 HUB     15.21     0.00    -0.02   245.05    -0.08   245.05     0.23     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.22    46.36    13.86   428.18   493.41     4.54   485.13   468.05     1.32
 MEAN    56.96    42.30    14.66   376.68   449.44     4.54   485.13   468.05     1.32
 HUB     52.30    37.84    14.46   316.92   400.67     4.54   485.13   468.05     1.32

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   355.47   243.87   258.62  1084.99      0.33     2.33     2.04     9.02
 MEAN    18.01   355.60   241.42   261.09  1082.66      0.33     2.40     2.13     7.35
 HUB     15.22   377.41   269.88   263.82  1080.37      0.35     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    425.47   316.01   181.60     0.29  4981.63      0.92     0.88
 MEAN   375.26   293.39   133.84     0.27  4349.47      0.92     0.88     0.88     1.69
 HUB    317.19   268.03    47.31     0.25  4109.64      0.92     0.88

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.24     1.11     4.87   506.65     1.03   496.49   477.13     0.91
 MEAN     5.17     1.10     4.80   504.53     1.03   494.36   476.03     0.97
 HUB      5.14     1.09     4.73   503.72     1.03   492.27   475.63     1.04

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.32    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN    42.76    27.14    23.50     3.64     0.95     0.51     1.63
 HUB     45.65    10.17     6.50     3.67     0.95     0.50     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.961       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   380.7344   242.0965   293.8503  1081.5035     0.3520    -0.1097     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   5.1812     4.7609   493.3106   476.2695     1.0085    39.4843    30.6000    -8.8843

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   284.7041    60.3593   278.2322  1087.1190     0.2619     0.3556     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     5.1760     4.9381   498.4483   476.1959   491.5697     0.0235     0.4532

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   295.0252     0.0000   295.0252  1086.5851     0.2715     0.3470     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9067	497.9672	476.1668	0.0000	0.0600	0.0622	0.2738

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8370	5.1612	1.0961	504.9649	15.0117	191.4249	1.4839

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
93366.859	0.516	133.999	236621.703	0.126302E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.588 EfDer = 0.976 SH = 0.131504E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.397	2387.630	5.161	504.965	1.000	1.000	0.980

W Kg/sec = 11.544 Wdry = 25.393 WH2O = 0.003 lbm/sec H2O = 0.057g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
71.370	2419.884	1.381	0.248	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56699.059	19926.398	2.611	545.479	208.925	424.468	2.032

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	249.46	-0.09	249.46	0.23	0.45	423.82
MEAN	17.74	0.00	-0.02	249.46	-0.09	249.46	0.23	0.41	
HUB	15.05	0.00	-0.02	249.46	-0.09	249.46	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.19	46.36	12.83	418.18	487.01	4.98	499.96	476.16	0.86
MEAN	55.99	43.40	12.59	369.60	445.98	4.98	499.96	476.16	0.86
HUB	51.50	38.84	12.66	313.58	400.77	4.98	499.96	476.16	0.86

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	347.86	227.45	263.20	1099.99	0.32	2.26	1.98	8.75
MEAN	17.51	350.01	228.24	265.37	1098.02	0.32	2.34	2.07	6.78
HUB	14.85	373.82	260.86	267.76	1096.08	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	412.76	321.89	185.31	0.29	4507.47	0.92	0.89		
MEAN	364.77	298.43	136.53	0.27	3997.15	0.92	0.89	0.89	1.64
HUB	309.41	272.12	48.55	0.25	3875.12	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.68	1.10	5.30	520.07	1.03	510.34	483.75	0.62
MEAN	5.62	1.09	5.24	518.36	1.03	508.51	482.93	0.66
HUB	5.60	1.09	5.18	517.95	1.03	506.71	482.75	0.70

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.83	35.15	31.50	3.65	0.93	0.50	1.40
MEAN	40.70	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.25	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	376.4218	229.7338	298.1874	1096.8110	0.3432	-0.1181	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6296	5.1945	507.3987	483.1483	0.6846	37.6119	31.5000	-6.1119

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	293.8095	64.0926	286.7336	1101.6100	0.2667	0.3011	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6264	5.3585	511.8497	483.0941	451.3937	0.0181	0.4259

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	298.7218	0.0000	298.7218	1101.3488	0.2712	0.3298	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3380	511.6157	483.0676	0.0000	0.0600	0.0491	0.2491

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8580	5.6142	1.0878	518.7888	13.8246	197.4453	1.5306

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
85996.656	0.505	123.421	235442.016	0.135736E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.920 EfDer = 0.987 SH = 0.141731E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.397	2387.630	5.614	518.789	1.000	1.000	0.980

W Kg/sec = 11.544 Wdry = 25.393 WH2O = 0.004 lbm/sec H2O = 0.065g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
66.503	2387.426	1.381	0.249	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53522.313	19926.320	2.637	513.330	194.683	395.845	2.033

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	250.24	-0.09	250.24	0.23	0.43	401.26
MEAN	16.97	0.00	-0.02	250.24	-0.09	250.24	0.23	0.39	
HUB	14.32	0.00	-0.02	250.24	-0.09	250.24	0.23	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.06	46.36	11.70	401.30	473.00	5.42	513.76	483.06	0.60
MEAN	54.72	43.80	10.92	353.60	433.26	5.42	513.76	483.06	0.60
HUB	50.02	37.84	12.18	298.37	389.48	5.42	513.76	483.06	0.60

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	335.30	207.75	263.17	1113.42	0.30	2.16	1.89	8.34
MEAN	16.57	337.44	208.76	265.12	1111.64	0.30	2.24	1.97	6.35
HUB	13.89	359.89	241.03	267.25	1109.90	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	393.38	322.05	185.63	0.29	3924.07	0.92	0.90		
MEAN	345.33	298.23	136.58	0.27	3461.39	0.92	0.90	0.90	1.59
HUB	289.41	271.59	48.38	0.24	3349.17	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.09	1.09	5.73	531.93	1.03	522.90	489.26	0.46
MEAN	6.04	1.08	5.67	530.38	1.02	521.23	488.56	0.48
HUB	6.02	1.07	5.60	530.01	1.02	519.60	488.40	0.51

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.29	35.20	31.50	3.70	0.93	0.47	1.40
MEAN	38.22	27.25	23.50	3.75	0.94	0.46	1.62
HUB	42.05	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.987	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	358.5873	209.9321	290.7118	1110.7872	0.3228	-0.0938	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.0465	5.6306	520.4390	488.7387	0.4968	35.8342	32.4000	-3.4342

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	292.2558	65.5444	284.8112	1114.4822	0.2622	0.2614	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.0449     5.7664   523.9089   488.7030   432.2457     0.0141     0.4026

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   289.8980     0.0000   289.8980  1114.5909     0.2601     0.3135     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.7610   524.0190   488.6783     0.0000     0.0600     0.0406     0.2475

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8714     6.0347     1.0749   530.7736    11.9856   213.4862     1.6549

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  74568.719       0.482     107.020  241155.703   0.146446E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.395   EfDer =  0.994    SH =  0.153574E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.397    2387.630       6.035     530.773       1.000       1.000       0.980
 W Kg/sec =  11.544  Wdry =  25.393  WH2O = 0.004  lbm/sec   H2O =   0.074g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.579    2360.318       1.381       0.249      53.353      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50803.848   19926.227       2.782     509.668     183.200     384.739       2.100

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   239.23    -0.08   239.23     0.21     0.40   377.34
 MEAN   15.91     0.00    -0.02   239.23    -0.08   239.23     0.21     0.37
 HUB    13.07     0.00    -0.02   239.23    -0.08   239.23     0.21     0.32

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    57.93    47.36    10.57   381.72   450.56     5.85   526.17   488.67     0.45
 MEAN   54.20    44.80     9.40   331.56   408.93     5.85   526.17   488.67     0.45
 HUB    48.71    38.84     9.87   272.33   362.54     5.85   526.17   488.67     0.45

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   318.58   194.73   252.14  1125.49     0.28     2.05     1.78     7.43
 MEAN   15.50   318.01   191.29   254.04  1123.65     0.28     2.13     1.86     5.75
 HUB    12.59   334.91   215.85   256.08  1121.84     0.30     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   373.80   309.26   179.07     0.27  3495.00     0.92     0.91
 MEAN  322.91   286.11   131.61     0.25  2965.91     0.92     0.91     0.91     1.58
 HUB   262.33   260.26    46.48     0.23  2718.62     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.49     1.07     6.14   542.48     1.02   534.32   493.92     0.36
 MEAN    6.42     1.06     6.07   540.71     1.02   532.58   493.15     0.38
 HUB     6.38     1.06     6.01   539.88     1.02   530.86   492.80     0.40

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    37.68    35.38    31.50     3.88     0.93     0.47     1.40
 MEAN   36.98    27.39    23.50     3.89     0.94     0.44     1.64
 HUB    40.13    10.29     6.50     3.79     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   348.5915   194.8017   289.0819  1122.2416     0.3106    -0.1749     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.4207    6.0105   531.2554   493.2869     0.3954    33.9746    33.0000    -0.9746
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   295.7007    67.5235   287.8879  1125.1294     0.2628     0.1402     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.4191     6.1220   533.9938   493.2596   410.5396     0.0246     0.3770

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   287.6487     0.0000   287.6487  1125.5194     0.2556     0.2999     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.1335   534.3712   493.2480     0.0000     0.0600     0.0369     0.1726

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8800     6.4147     1.0630   541.0203    10.2475   233.8993     1.8132

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  63765.508       0.456      91.515  253087.563   0.158902E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1475   Tt4 =   541.0203   T1  =   471.4712

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    432637.78    620.9152     84.7614      1.5276      0.8409     15.2082      1.1475     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 37357 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.268   EfDer =  0.956    SH =  0.965871E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.949    2357.155       4.337     469.499       1.000       1.000       0.980
  W Kg/sec =  11.795  Wdry =  25.947  WH2O = 0.003  lbm/sec   H2O =   0.038g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.676    2477.574       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  63393.563   20360.174       3.395     831.557     244.938     619.754       2.530

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   182.96    -0.06   182.96     0.17     0.44   446.03
 MEAN    17.06     0.00    -0.02   182.96    -0.06   182.96     0.17     0.38
 HUB     12.51     0.00    -0.02   182.96    -0.06   182.96     0.17     0.30

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.68    50.47    16.21   424.36   462.18      4.25   466.81   456.00     2.16
 MEAN    62.47    47.20    15.27   350.93   395.82      4.25   466.81   456.00     2.16
 HUB     54.59    38.62    15.97   257.33   315.80      4.25   466.81   456.00     2.16

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   381.12   291.35   245.70  1064.29      0.36     7.29     6.52    16.04
 MEAN    18.04   386.05   295.26   248.70  1061.43      0.36     7.43     6.80    12.53
 HUB     15.00   418.49   333.46   252.86  1057.88      0.40     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    424.36   279.40   133.01     0.26  6011.82      0.92     0.87
 MEAN   371.00   259.98    75.74     0.24  5326.43      0.92     0.87     0.87     1.75
 HUB    308.55   254.08    24.91     0.24  5002.64      0.92     0.87

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.95     1.14     4.53   489.39     1.04   477.71   468.35     1.51
 MEAN     4.88     1.12     4.45   487.12     1.04   475.14   467.04     1.65
 HUB      4.84     1.12     4.35   486.05     1.04   471.97   466.45     1.86

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.86    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    49.89    16.94    12.70     4.24     0.95     0.52     2.22
 HUB     52.83    -5.63    -9.30     3.67     0.95     0.38     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.956       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   397.4471   294.6886   266.6886  1061.0640     0.3746    -0.0370     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.8840     4.4385   474.8169   467.2756     1.6861    47.8554    35.4000   -12.4554

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   265.4007    64.9251   257.3369  1068.8953     0.2483     0.5088     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.8736     4.6715   481.8554   467.1614   554.9116     0.0336     0.6003

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   264.2325     0.0000   264.2325  1068.9396     0.2472     0.4795     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.6521   481.9050   467.1178     0.0000     0.0600     0.0837     0.4648
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8187     4.8514     1.1186   487.5190    18.0206   168.9940     1.3100

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 112061.555       0.622     164.328  266676.531   0.106085E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.688   EfDer =  0.961    SH =  0.115357E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.949    2357.155       4.851     487.519       1.000       1.000       0.980
 W Kg/sec =  11.795  Wdry =  25.946  WH2O = 0.003  lbm/sec   H2O =   0.048g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.227    2431.366       1.381       0.248      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59457.438   20360.025       2.646     590.487     223.136     468.502       2.100

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   241.66    -0.08   241.66     0.23     0.46   436.01
 MEAN    18.08     0.00    -0.02   241.66    -0.08   241.66     0.23     0.41
 HUB     15.21     0.00    -0.02   241.66    -0.08   241.66     0.23     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.25    46.36    13.89   422.71   486.99     4.68   482.82   467.14     1.41
 MEAN    56.99    42.30    14.69   371.87   443.56     4.68   482.82   467.14     1.41
 HUB     52.32    37.84    14.48   312.87   395.40     4.68   482.82   467.14     1.41

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   350.95   240.79   255.31  1082.14     0.32     2.33     2.04     9.02
 MEAN    18.01   351.04   238.38   257.69  1079.87     0.33     2.40     2.13     7.35
 HUB     15.22   372.53   266.47   260.33  1077.64     0.35     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    420.04   311.96   179.25     0.29  4918.62     0.92     0.88
 MEAN   370.47   289.57   132.09     0.27  4294.64     0.92     0.88     0.88     1.69
 HUB    313.14   264.48    46.67     0.25  4057.78     0.92     0.88

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.39     1.11     5.01   503.79     1.03   493.89   476.22     0.98
 MEAN     5.32     1.10     4.95   501.73     1.03   491.82   475.12     1.05
 HUB      5.29     1.09     4.88   500.94     1.03   489.78   474.72     1.12

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.32    35.07    31.50     3.57     0.93     0.54     1.40
 MEAN    42.77    27.14    23.50     3.64     0.95     0.51     1.63
 HUB     45.67    10.16     6.50     3.66     0.95     0.50     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.961       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   375.8126   239.0447   289.9875  1078.7428     0.3484    -0.1096     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   5.3278     4.9041   490.7963   475.3588     1.0840    39.4997    30.6000    -8.8997

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   281.1149    59.5984   274.7247  1084.2240     0.2593     0.3556     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     5.3227     5.0827   495.7979   475.2883   491.5697     0.0232     0.4531

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   291.2793     0.0000   291.2793  1083.7036     0.2688     0.3467     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0510	495.3302	475.2604	0.0000	0.0600	0.0623	0.2736

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8368	5.3076	1.0940	502.1514	14.6330	191.3039	1.4830

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
91010.984	0.516	133.459	242533.484	0.119031E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.581 EfDer = 0.977 SH = 0.123769E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.949	2357.155	5.308	502.151	1.000	1.000	0.980

W Kg/sec = 11.795 Wdry = 25.946 WH2O = 0.003 lbm/sec H2O = 0.055g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.713	2395.680	1.381	0.248	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55991.523	20359.957	2.635	545.479	207.001	424.468	2.051

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	246.35	-0.08	246.35	0.23	0.44	419.58
MEAN	17.74	0.00	-0.02	246.35	-0.08	246.35	0.23	0.41	
HUB	15.05	0.00	-0.02	246.35	-0.08	246.35	0.23	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.18	46.36	12.82	412.84	480.83	5.12	497.27	475.25	0.92
MEAN	55.98	43.40	12.58	364.88	440.33	5.12	497.27	475.25	0.92
HUB	51.50	38.84	12.66	309.58	395.70	5.12	497.27	475.25	0.92

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	343.54	224.37	260.16	1096.79	0.31	2.26	1.98	8.75
MEAN	17.51	345.65	225.17	262.25	1094.86	0.32	2.34	2.07	6.78
HUB	14.85	369.19	257.50	264.56	1092.98	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	407.49	318.15	183.13	0.29	4446.37	0.92	0.89		
MEAN	360.11	294.93	134.94	0.27	3943.49	0.92	0.89	0.89	1.64
HUB	305.47	268.87	47.96	0.25	3825.22	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.83	1.10	5.45	516.86	1.03	507.37	482.84	0.67
MEAN	5.77	1.09	5.39	515.19	1.03	505.59	482.02	0.71
HUB	5.75	1.08	5.32	514.80	1.03	503.84	481.84	0.75

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.78	35.14	31.50	3.64	0.93	0.50	1.40
MEAN	40.65	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.23	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.977	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	371.7343	226.6495	294.6462	1093.6837	0.3399	-0.1181	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7792	5.3407	504.5091	482.2407	0.7386	37.5684	31.5000	-6.0684

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	290.4612	63.3621	283.4659	1098.3619	0.2644	0.3001	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7761	5.5055	508.8355	482.1890	451.3937	0.0178	0.4249

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	295.2998	0.0000	295.2998	1098.1072	0.2689	0.3288	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4848	508.6076	482.1636	0.0000	0.0600	0.0490	0.2480

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8582	5.7637	1.0859	515.6175	13.4668	197.5550	1.5314

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
83769.445	0.504	122.840	241448.109	0.127641E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.879 EfDer = 0.987 SH = 0.133071E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.949	2357.155	5.764	515.617	1.000	1.000	0.980

W Kg/sec = 11.795 Wdry = 25.946 WH2O = 0.003 lbm/sec H2O = 0.063g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.984	2364.190	1.381	0.248	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52919.512	20359.885	2.658	513.330	193.162	395.845	2.049

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	247.42	-0.09	247.42	0.22	0.42	397.35
MEAN	16.97	0.00	-0.02	247.42	-0.09	247.42	0.22	0.39	
HUB	14.32	0.00	-0.02	247.42	-0.09	247.42	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.02	46.36	11.66	396.18	467.16	5.57	510.70	482.16	0.64
MEAN	54.68	43.80	10.88	349.09	427.95	5.57	510.70	482.16	0.64
HUB	49.98	37.84	12.14	294.56	384.75	5.57	510.70	482.16	0.64

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	331.25	204.71	260.42	1109.89	0.30	2.16	1.89	8.34
MEAN	16.57	333.40	205.79	262.30	1108.16	0.30	2.24	1.97	6.35
HUB	13.89	355.61	237.86	264.36	1106.46	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	388.36	318.67	183.66	0.29	3866.47	0.92	0.90		
MEAN	340.93	295.07	135.14	0.27	3412.19	0.92	0.90	0.90	1.59
HUB	285.72	268.66	47.86	0.24	3305.03	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.25	1.08	5.88	528.40	1.02	519.58	488.35	0.50
MEAN	6.19	1.07	5.82	526.90	1.02	517.97	487.65	0.52
HUB	6.17	1.07	5.75	526.55	1.02	516.38	487.49	0.55

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.17	35.19	31.50	3.69	0.93	0.47	1.40
MEAN	38.12	27.26	23.50	3.76	0.94	0.46	1.62
HUB	41.98	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.987	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	354.3167	206.9475	287.5988	1107.3198	0.3200	-0.0940	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.1983	5.7791	517.1930	487.8297	0.5374	35.7377	32.4000	-3.3377

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	289.2412	64.8684	281.8734	1110.9156	0.2604	0.2593	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.1968	5.9151	520.5591	487.7955	432.2457	0.0139	0.4009

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	286.9009	0.0000	286.9009	1111.0232	0.2582	0.3118	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.9098	520.6674	487.7719	0.0000	0.0600	0.0404	0.2455

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8717	6.1865	1.0733	527.2832	11.6665	213.8603	1.6578

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
72581.383	0.481	106.434	247424.766	0.137356E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.324 EfDer = 0.994 SH = 0.143854E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.949	2357.155	6.186	527.283	1.000	1.000	0.980

W Kg/sec = 11.795 Wdry = 25.945 WH2O = 0.004 lbm/sec H2O = 0.071g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.167	2337.891	1.381	0.249	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50286.652	20359.797	2.800	509.668	181.992	384.739	2.114

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	236.80	-0.08	236.80	0.21	0.40	373.75
MEAN	15.91	0.00	-0.02	236.80	-0.08	236.80	0.21	0.36	
HUB	13.07	0.00	-0.02	236.80	-0.08	236.80	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.86	47.36	10.50	376.84	445.14	6.00	522.78	487.77	0.49
MEAN	54.12	44.80	9.32	327.33	404.07	6.00	522.78	487.77	0.49
HUB	48.64	38.84	9.80	268.85	358.33	6.00	522.78	487.77	0.49

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	314.81	191.64	249.75	1121.66	0.28	2.05	1.78	7.43
MEAN	15.50	314.33	188.43	251.59	1119.87	0.28	2.13	1.86	5.75
HUB	12.59	331.15	213.00	253.56	1118.11	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	369.03	306.34	177.38	0.27	3439.60	0.92	0.91		
MEAN	318.79	283.36	130.36	0.25	2921.47	0.92	0.91	0.91	1.58
HUB	258.98	257.69	45.98	0.23	2682.75	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.64	1.07	6.29	538.66	1.02	530.69	493.00	0.39
MEAN	6.57	1.06	6.22	536.94	1.02	529.00	492.24	0.41
HUB	6.54	1.06	6.16	536.15	1.02	527.34	491.89	0.43

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.50	35.38	31.50	3.88	0.93	0.46	1.40
MEAN	36.83	27.39	23.50	3.89	0.93	0.44	1.64
HUB	40.03	10.28	6.50	3.78	0.93	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	344.6235	191.8823	286.2630	1118.4897	0.3081	-0.1753	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.5738	6.1603	527.7057	492.3725	0.4283	33.8340	33.0000	-0.8340

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   292.9149    66.8874   285.1757  1121.2932     0.2612     0.1370     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.5723     6.2716   530.3550   492.3464   410.5396     0.0243     0.3746

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   284.9452     0.0000   284.9452  1121.6772     0.2540     0.2973     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.2832   530.7249   492.3351     0.0000     0.0600     0.0368     0.1693

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8802     6.5678     1.0616   537.2499     9.9675   234.5652     1.8183

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  62020.949       0.455      90.948  259780.344   0.148689E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1443   Tt4 =   537.2499   T1  =   469.4992

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    421444.28    618.0090     83.6761      1.5143      0.8408     15.2680      1.1443     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 10% 34281 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.373   EfDer =  0.955    SH =  0.116041E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     27.785    2282.956       4.829     471.209       1.000       1.000       0.980
  W Kg/sec =  12.630  Wdry =  27.782  WH2O = 0.003  lbm/sec   H2O =   0.051g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.623    2395.230       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  61123.965   21800.490       3.523     831.557     236.006     619.754       2.626

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
  TIP     20.63     0.00    -0.02   176.41    -0.06   176.41     0.17     0.42   431.20
  MEAN    17.06     0.00    -0.02   176.41    -0.06   176.41     0.17     0.36
  HUB     12.51     0.00    -0.02   176.41    -0.06   176.41     0.17     0.29

        BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
  TIP     66.77    50.47    16.30   411.00   447.32      4.74   468.71   458.00     2.66
  MEAN    62.57    47.20    15.37   339.88   382.99      4.74   468.71   458.00     2.66
  HUB     54.71    38.62    16.09   249.23   305.40      4.74   468.71   458.00     2.66

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
  TIP     20.63   369.08   282.42   237.60  1065.63      0.35     7.29     6.52    16.04
  MEAN    18.04   373.67   286.16   240.30  1062.95      0.35     7.43     6.80    12.53
  HUB     15.00   404.72   322.87   244.03  1059.64      0.38     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
  TIP    411.00   270.16   128.58     0.25  5827.66      0.92     0.87
  MEAN   359.32   251.19    73.17     0.24  5162.15      0.92     0.87     0.87     1.75
  HUB    298.84   245.21    24.03     0.23  4843.81      0.92     0.87

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
  TIP      5.46     1.13     5.03   489.88     1.04   478.93   469.76     1.89
  MEAN     5.39     1.12     4.95   487.75     1.04   476.52   468.51     2.06
  HUB      5.35     1.11     4.85   486.73     1.03   473.56   467.94     2.30

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
  TIP     49.93    28.42    24.20     4.22     0.93     0.57     1.80
  MEAN    49.98    16.93    12.70     4.23     0.95     0.52     2.22
  HUB     52.92    -5.62    -9.30     3.68     0.95     0.39     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.955       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   384.6269   285.6001   257.6247  1062.6151     0.3620    -0.0370     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.3957     4.9344   476.2231   468.7327     2.0955    47.9481    35.4000   -12.5481

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   256.9864    62.8667   249.1782  1069.9324     0.2402     0.5097     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.3854     5.1761   482.8079   468.6114   554.9116     0.0327     0.6004

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   255.8171     0.0000   255.8171  1069.9752     0.2391     0.4789     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.1553   482.8560   468.5700     0.0000     0.0600     0.0843     0.4642
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8175     5.3618     1.1104   488.1175    16.9093   168.5596     1.3067

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 105164.859       0.623     165.125  284445.000   0.125416E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.689   EfDer =  0.961    SH =  0.134357E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     27.785    2282.956       5.362     488.117       1.000       1.000       0.980
 W Kg/sec =  12.630  Wdry =  27.781  WH2O = 0.004  lbm/sec   H2O =   0.062g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.897    2353.388       1.381       0.248      53.353      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57583.227   21800.334       2.730     590.487     216.320     468.502       2.166

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   234.04    -0.08   234.04     0.22     0.44   422.03
 MEAN    18.08     0.00    -0.02   234.04    -0.08   234.04     0.22     0.40
 HUB     15.21     0.00    -0.02   234.04    -0.08   234.04     0.22     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.25    46.36    13.89   409.41   471.65     5.19   483.71   468.59     1.76
 MEAN    56.99    42.30    14.69   360.16   429.60     5.19   483.71   468.59     1.76
 HUB     52.33    37.84    14.49   303.02   382.95     5.19   483.71   468.59     1.76

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   340.13   232.75   248.03  1082.30      0.31     2.33     2.04     9.02
 MEAN    18.01   340.25   230.61   250.18  1080.19      0.31     2.40     2.13     7.35
 HUB     15.22   361.06   258.01   252.57  1078.10      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    406.82   303.02   174.07     0.28  4754.35      0.92     0.88
 MEAN   358.80   281.11   128.20     0.26  4154.66      0.92     0.88     0.88     1.68
 HUB    303.28   256.59    45.27     0.24  3928.98      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.91     1.10     5.53   503.35     1.03   494.05   477.26     1.24
 MEAN     5.84     1.09     5.46   501.43     1.03   492.12   476.22     1.32
 HUB      5.82     1.08     5.39   500.70     1.03   490.22   475.84     1.41

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.18    35.06    31.50     3.56     0.93     0.53     1.40
 MEAN    42.67    27.13    23.50     3.63     0.95     0.51     1.63
 HUB     45.61    10.16     6.50     3.66     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.961       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   364.2480   231.2533   281.4223  1079.1235     0.3375    -0.1099     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8533     5.4150   491.1593   476.4520     1.3696    39.4110    30.6000    -8.8110

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   273.2738    57.9360   267.0618  1084.2319     0.2520     0.3532     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8484     5.5988   495.8218   476.3775   491.5697     0.0223     0.4506

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   283.0714     0.0000   283.0714  1083.7443     0.2612     0.3443     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5659	495.3835	476.3526	0.0000	0.0600	0.0618	0.2708

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8369	5.8326	1.0878	501.8250	13.7081	191.4710	1.4843

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
85269.602	0.515	133.887	259037.891	0.137902E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.474 EfDer = 0.977 SH = 0.142439E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.785	2282.956	5.833	501.825	1.000	1.000	0.980

W Kg/sec = 12.630 Wdry = 27.781 WH2O = 0.004 lbm/sec H2O = 0.070g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.878	2321.024	1.381	0.248	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54446.340	21800.266	2.705	545.479	201.634	424.468	2.105

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	239.55	-0.08	239.55	0.22	0.43	406.50
MEAN	17.74	0.00	-0.02	239.55	-0.08	239.55	0.22	0.39	
HUB	15.05	0.00	-0.02	239.55	-0.08	239.55	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.08	46.36	12.72	399.85	466.18	5.64	497.21	476.34	1.17
MEAN	55.87	43.40	12.47	353.40	427.00	5.64	497.21	476.34	1.17
HUB	51.38	38.84	12.54	299.83	383.84	5.64	497.21	476.34	1.17

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	333.28	216.14	253.69	1095.96	0.30	2.26	1.98	8.75
MEAN	17.51	335.49	217.34	255.58	1094.18	0.31	2.34	2.07	6.78
HUB	14.85	358.45	249.17	257.67	1092.42	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	394.67	310.21	178.52	0.28	4283.41	0.92	0.89		
MEAN	348.78	287.40	131.44	0.26	3806.25	0.92	0.89	0.89	1.63
HUB	295.85	261.87	46.68	0.24	3701.48	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.37	1.09	5.98	515.54	1.03	506.62	483.61	0.87
MEAN	6.30	1.08	5.91	514.02	1.02	504.97	482.83	0.92
HUB	6.29	1.08	5.85	513.68	1.02	503.35	482.68	0.97

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.43	35.13	31.50	3.63	0.93	0.50	1.40
MEAN	40.38	27.22	23.50	3.72	0.94	0.48	1.62
HUB	44.04	10.27	6.50	3.77	0.94	0.48	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.977	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	360.9131	218.7611	287.0573	1093.0532	0.3302	-0.1191	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3168	5.8632	503.9431	483.0465	0.9508	37.3104	31.5000	-5.8104

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	283.4045	61.8228	276.5792	1097.3969	0.2583	0.2940	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3139	6.0314	507.9573	482.9918	451.3937	0.0170	0.4199

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	288.0698	0.0000	288.0698	1097.1570	0.2626	0.3240	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.0101	507.7429	482.9691	0.0000	0.0600	0.0480	0.2420

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8592	6.3012	1.0803	514.4129	12.5887	198.4471	1.5383

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
78316.563	0.503	122.969	258300.563	0.146126E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.670 EfDer = 0.988 SH = 0.151266E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.785	2282.956	6.301	514.413	1.000	1.000	0.980

W Kg/sec = 12.630 Wdry = 27.781 WH2O = 0.004 lbm/sec H2O = 0.078g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
64.551	2292.449	1.381	0.249	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51651.043	21800.189	2.716	513.330	188.970	395.845	2.095

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	241.49	-0.08	241.49	0.22	0.41	385.29
MEAN	16.97	0.00	-0.02	241.49	-0.08	241.49	0.22	0.38	
HUB	14.32	0.00	-0.02	241.49	-0.08	241.49	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.82	46.36	11.46	383.71	453.44	6.10	509.73	482.96	0.83
MEAN	54.47	43.80	10.67	338.10	415.55	6.10	509.73	482.96	0.83
HUB	49.76	37.84	11.92	285.29	373.84	6.10	509.73	482.96	0.83

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	321.77	196.50	254.81	1108.15	0.29	2.16	1.89	8.34
MEAN	16.57	324.09	198.08	256.51	1106.56	0.29	2.24	1.97	6.35
HUB	13.89	345.91	229.99	258.38	1105.00	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	376.14	311.77	179.64	0.28	3711.45	0.92	0.90		
MEAN	330.19	288.54	132.11	0.26	3284.35	0.92	0.90	0.90	1.58
HUB	276.72	262.57	46.73	0.24	3195.78	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.79	1.08	6.41	526.30	1.02	517.98	488.89	0.66
MEAN	6.73	1.07	6.35	524.93	1.02	516.49	488.23	0.68
HUB	6.72	1.07	6.29	524.65	1.02	515.03	488.11	0.71

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.64	35.18	31.50	3.68	0.93	0.47	1.40
MEAN	37.68	27.25	23.50	3.75	0.94	0.45	1.62
HUB	41.67	10.25	6.50	3.75	0.94	0.45	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.988	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	344.5973	199.1930	281.1930	1105.7571	0.3116	-0.0952	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7450	6.3113	515.7484	488.4082	0.7007	35.3132	32.4000	-2.9132

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	283.1508	63.5025	275.9381	1109.0737	0.2553	0.2501	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.7437     6.4487   518.8484   488.3722   432.2457     0.0132     0.3934

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   280.8368     0.0000   280.8368  1109.1785     0.2532     0.3044     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.4433   518.9531   488.3503     0.0000     0.0600     0.0395     0.2367

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8730     6.7331     1.0685   525.2916    10.8794   215.6189     1.6715

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  67692.078       0.478     106.287  265091.406   0.155281E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.023   EfDer =  0.995    SH =  0.161333E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     27.785    2282.956       6.733     525.291       1.000       1.000       0.980
 W Kg/sec =  12.630  Wdry =  27.781  WH2O = 0.004  lbm/sec   H2O =   0.088g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     61.045    2268.587       1.381       0.249      53.354      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  49244.773   21800.104       2.852     509.668     178.711     384.739       2.153

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   231.89    -0.08   231.89     0.21     0.39   362.67
 MEAN   15.91     0.00    -0.02   231.89    -0.08   231.89     0.21     0.35
 HUB    13.07     0.00    -0.02   231.89    -0.08   231.89     0.21     0.31

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    57.58    47.36    10.22   364.98   432.48      6.53   520.97   488.34     0.63
 MEAN   53.82    44.80     9.02   317.03   392.85      6.53   520.97   488.34     0.63
 HUB    48.32    38.84     9.48   260.39   348.74      6.53   520.97   488.34     0.63

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   306.10   183.34   245.12  1119.11      0.27     2.05     1.78     7.43
 MEAN   15.50   305.98   180.88   246.79  1117.47      0.27     2.13     1.86     5.75
 HUB    12.59   322.68   205.74   248.58  1115.85      0.29     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   357.41   300.64   174.07     0.27  3290.57      0.92     0.91
 MEAN  308.75   277.95   127.87     0.25  2804.54      0.92     0.91     0.91     1.56
 HUB   250.82   252.63    45.09     0.23  2591.30      0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     7.19     1.07     6.83   535.83     1.02   528.30   493.35     0.52
 MEAN    7.12     1.06     6.76   534.27     1.02   526.75   492.63     0.54
 HUB     7.09     1.05     6.70   533.59     1.02   525.22   492.32     0.57

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    36.79    35.38    31.50     3.88     0.93     0.45     1.40
 MEAN   36.24    27.39    23.50     3.89     0.93     0.43     1.64
 HUB    39.61    10.28     6.50     3.78     0.93     0.42     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.995       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   335.7577   184.2009   280.7191  1116.1404     0.3008    -0.1776     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.1265     6.6984   525.5034   492.7671     0.5617    33.2719    33.0000    -0.2719
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   287.5472    65.6616   279.9499  1118.7012     0.2570     0.1237     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.1252     6.8093   527.9181   492.7401   410.5396     0.0236     0.3653

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   279.7390     0.0000   279.7390  1119.0718     0.2500     0.2873     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.8214   528.2739   492.7286     0.0000     0.0600     0.0366     0.1562

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8808     7.1203     1.0575   534.5621     9.2712   237.3458     1.8399

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57694.184       0.452      90.589  278708.750   0.165794E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1344   Tt4 =   534.5621   T1  =   471.2089

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    394137.31    618.8569     80.6226      1.4746      0.8415     15.3730      1.1344     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 30029 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =13.907   EfDer =  0.967    SH =  0.201136E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     31.676    2155.605       5.592     480.736       1.000       1.000       0.980
  W Kg/sec =  14.398  Wdry =  31.669  WH2O = 0.006  lbm/sec   H2O =   0.100g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.159    2239.096       1.381       0.249      53.355      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  61376.906   24852.438       3.544     831.557     234.665     619.754       2.641

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1       CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63      0.00    -0.02   177.14    -0.06   177.14      0.17     0.40   403.09
 MEAN    17.06      0.00    -0.02   177.14    -0.06   177.14      0.17     0.34
 HUB     12.51      0.00    -0.02   177.14    -0.06   177.14      0.17     0.28

        BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.47     50.47    15.00   388.08    426.65     5.49   478.21   465.18     3.51
 MEAN    61.11     47.20    13.91   320.92    366.62     5.49   478.21   465.18     3.51
 HUB     53.04     38.62    14.42   235.33    294.60     5.49   478.21   465.18     3.51

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   352.83   258.69   239.93  1074.40      0.33     7.29     6.52    16.04
 MEAN    18.04   359.70   265.89   242.26  1072.15      0.34     7.43     6.80    12.53
 HUB     15.00   392.85   306.63   245.58  1069.28      0.37     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    388.08   272.59   129.38     0.25  5338.12      0.92     0.88
 MEAN   339.28   253.13    73.39     0.24  4796.59      0.92     0.88     0.88     1.66
 HUB    282.17   246.79    24.47     0.23  4600.27      0.92     0.88

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.22     1.11     5.78   496.88     1.03   486.87   475.05     2.65
 MEAN     6.15     1.10     5.70   495.24     1.03   484.84   474.13     2.85
 HUB      6.13     1.10     5.59   494.65     1.03   482.24   473.84     3.11

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     47.15    28.34    24.20     4.14     0.93     0.53     1.80
 MEAN    47.66    16.85    12.70     4.15     0.95     0.48     2.22
 HUB     51.31    -5.69    -9.30     3.61     0.95     0.35     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.967       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   371.3333   265.3707   259.7438  1071.7762     0.3465    -0.0423     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.1617     5.6768   484.5063   474.3372     2.8886    45.6139    35.4000   -10.2139

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   260.3981    63.7013   252.4863  1077.9845     0.2416     0.4692     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.1541     5.9124   490.1390   474.1911   554.9116     0.0259     0.5582

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   258.9447     0.0000   258.9447  1078.0414     0.2402     0.4497     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.8949   490.1996   474.1573     0.0000     0.0600     0.0697     0.4326
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8352     6.1331     1.0967   495.5885    14.8525   175.7274     1.3622

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  92408.906       0.614     165.415  319366.938   0.212034E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =12.845   EfDer =  0.975    SH =  0.221919E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.676    2155.605       6.133     495.588       1.000       1.000       0.980
 W Kg/sec =  14.398  Wdry =  31.669  WH2O = 0.007  lbm/sec   H2O =   0.116g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     74.211    2205.296       1.381       0.249      53.355      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58284.625   24852.234       2.718     590.487     217.255     468.502       2.156

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   236.89    -0.08   236.89     0.22     0.42   395.47
 MEAN    18.08     0.00    -0.02   236.89    -0.08   236.89     0.22     0.38
 HUB     15.21     0.00    -0.02   236.89    -0.08   236.89     0.22     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.50    46.36    12.14   386.57   453.45     5.93   491.08   474.17     2.45
 MEAN    55.15    42.30    12.85   340.07   414.52     5.93   491.08   474.17     2.45
 HUB     50.38    37.84    12.54   286.12   371.52     5.93   491.08   474.17     2.45

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2      Cu2      Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   326.66   207.24   252.51  1088.56     0.30     2.33     2.04     9.02
 MEAN    18.01   328.99   208.72   254.31  1086.86     0.30     2.40     2.13     7.35
 HUB     15.22   351.57   240.64   256.30  1085.20     0.32     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    384.12   308.30   176.89     0.28  4233.43     0.92     0.89
 MEAN   338.79   285.64   130.07     0.26  3760.49     0.92     0.89     0.89     1.59
 HUB    286.36   260.35    45.72     0.24  3664.48     0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.66     1.09     6.26   508.39     1.03   499.81   481.35     1.84
 MEAN     6.60     1.08     6.20   506.96     1.02   498.26   480.59     1.94
 HUB      6.59     1.07     6.13   506.67     1.02   496.73   480.46     2.04

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.38    35.01    31.50     3.51     0.93     0.48     1.40
 MEAN    39.38    27.09    23.50     3.59     0.94     0.47     1.63
 HUB     43.19    10.12     6.50     3.62     0.94     0.46     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.975       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   354.4999   209.3046  286.1150  1085.7416     0.3265    -0.1231     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6122     6.1475   497.2390   480.8135     2.0048    36.1870    30.6000    -5.5870

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   278.9829    59.1464   272.6411  1089.9298     0.2560     0.2893     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6095     6.3189   501.0833   480.7270   491.5697     0.0165     0.3972

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   288.7729     0.0000   288.7729  1089.4364     0.2651     0.2987     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.2863	500.6366	480.7139	0.0000	0.0600	0.0471	0.2114

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8565	6.5967	1.0756	507.3376	11.7496	204.1237	1.5824

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
73115.203	0.496	130.878	292036.344	0.225751E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =10.397 EfDer = 0.990 SH = 0.230733E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.676	2155.605	6.597	507.337	1.000	1.000	0.980

W Kg/sec = 14.398 Wdry = 31.668 WH2O = 0.007 lbm/sec H2O = 0.127g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.809	2179.611	1.381	0.249	53.356	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55526.164	24852.148	2.669	545.479	204.373	424.468	2.077

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	244.30	-0.08	244.30	0.22	0.41	381.73
MEAN	17.74	0.00	-0.02	244.30	-0.08	244.30	0.22	0.38	
HUB	15.05	0.00	-0.02	244.30	-0.08	244.30	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.10	46.36	10.74	377.54	449.76	6.37	502.54	480.69	1.74
MEAN	53.80	43.40	10.40	333.68	413.62	6.37	502.54	480.69	1.74
HUB	49.22	38.84	10.38	283.11	374.01	6.37	502.54	480.69	1.74

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	322.01	189.64	260.25	1099.97	0.29	2.26	1.98	8.75
MEAN	17.51	326.28	194.76	261.78	1098.60	0.30	2.34	2.07	6.78
HUB	14.85	350.82	231.63	263.48	1097.25	0.32	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	372.65	318.15	183.01	0.29	3758.40	0.92	0.91		
MEAN	329.32	294.34	134.56	0.27	3411.04	0.92	0.91	0.91	1.53
HUB	279.35	267.77	47.71	0.24	3441.02	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.09	1.08	6.69	518.70	1.02	510.37	486.70	1.37
MEAN	7.05	1.07	6.63	517.65	1.02	509.09	486.17	1.43
HUB	7.05	1.07	6.58	517.74	1.02	507.85	486.24	1.48

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.08	35.12	31.50	3.62	0.93	0.44	1.40
MEAN	36.65	27.20	23.50	3.70	0.94	0.43	1.62
HUB	41.32	10.26	6.50	3.76	0.94	0.44	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.990	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	353.4532	196.0361	294.1071	1097.3960	0.3221	-0.1336	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.0602	6.5767	507.9915	486.3819	1.4748	33.6853	31.5000	-2.1853

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	291.5375	63.5969	284.5164	1100.8562	0.2648	0.2180	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.0588	6.7273	511.2001	486.3184	451.3937	0.0132	0.3615

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	296.2009	0.0000	296.2009	1100.6119	0.2691	0.2684	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7065	510.9799	486.3036	0.0000	0.0600	0.0382	0.1698

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8743	7.0480	1.0684	518.0292	10.6921	213.8182	1.6575

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
66542.930	0.479	119.114	292291.563	0.234574E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.347 EfDer = 0.998 SH = 0.239898E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.676	2155.605	7.048	518.029	1.000	1.000	0.980

W Kg/sec = 14.398 Wdry = 31.668 WH2O = 0.008 lbm/sec H2O = 0.138g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
66.023	2157.001	1.381	0.249	53.356	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53080.047	24852.059	2.656	513.330	193.294	395.845	2.048

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	248.17	-0.09	248.17	0.23	0.40	362.53
MEAN	16.97	0.00	-0.02	248.17	-0.09	248.17	0.23	0.37	
HUB	14.32	0.00	-0.02	248.17	-0.09	248.17	0.23	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.60	46.36	9.24	362.30	439.22	6.81	513.08	486.28	1.30
MEAN	52.15	43.80	8.35	319.24	404.42	6.81	513.08	486.28	1.30
HUB	47.36	37.84	9.52	269.38	366.33	6.81	513.08	486.28	1.30

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	313.13	169.35	263.39	1110.09	0.28	2.16	1.89	8.34
MEAN	16.57	317.52	175.33	264.72	1108.91	0.29	2.24	1.97	6.35
HUB	13.89	340.90	212.96	266.20	1107.75	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	355.16	322.33	185.80	0.29	3199.02	0.92	0.91		
MEAN	311.77	297.82	136.45	0.27	2907.31	0.92	0.91	0.91	1.48
HUB	261.29	270.55	48.32	0.24	2959.28	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.49	1.06	7.10	527.70	1.02	519.82	491.14	1.07
MEAN	7.45	1.06	7.04	526.82	1.02	518.72	490.72	1.11
HUB	7.46	1.06	6.99	526.97	1.02	517.64	490.82	1.14

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.74	35.20	31.50	3.70	0.93	0.40	1.40
MEAN	33.52	27.27	23.50	3.77	0.93	0.40	1.62
HUB	38.66	10.29	6.50	3.79	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.998	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	339.6429	176.3136	290.2943	1108.0198	0.3065	-0.1079	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.4637	6.9989	517.8953	490.8999	1.1345	31.2729	32.4000	1.1271

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	293.4195	65.8054	285.9452	1110.5311	0.2642	0.1654	2.2705

```
   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4628     7.1139   520.2462   490.8582   432.2457     0.0122     0.3305

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   290.9632     0.0000   290.9632  1110.6484     0.2620     0.2380     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.1096   520.3614   490.8375     0.0000     0.0600     0.0370     0.1552

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8793     7.4523     1.0574   527.1627     9.1342   235.2420     1.8236

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  56854.406       0.451     101.771  301005.406   0.243902E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.478   EfDer =  1.000    SH =  0.249854E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.676    2155.605       7.452     527.163       1.000       1.000       0.980
 W Kg/sec =  14.398  Wdry =  31.668  WH2O = 0.008  lbm/sec   H2O =   0.150g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.990    2138.233       1.381       0.249      53.356      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50982.109   24851.963       2.764     509.668     184.416     384.739       2.086

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   240.07    -0.08   240.07     0.22     0.38   341.83
 MEAN    15.91     0.00    -0.02   240.07    -0.08   240.07     0.22     0.34
 HUB     13.07     0.00    -0.02   240.07    -0.08   240.07     0.22     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.14    47.36     7.78   344.62   420.07     7.22   522.53   490.82     1.02
 MEAN    51.28    44.80     6.48   299.34   383.78     7.22   522.53   490.82     1.02
 HUB     45.69    38.84     6.85   245.86   343.69     7.22   522.53   490.82     1.02

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   299.12   156.01   255.22  1119.23      0.27     2.05     1.78     7.43
 MEAN    15.50   301.48   158.37   256.54  1118.00      0.27     2.13     1.86     5.75
 HUB     12.59   320.25   189.78   257.96  1116.80      0.29     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    337.47   313.15   181.46     0.28  2800.37      0.92     0.91
 MEAN   291.53   289.04   133.16     0.26  2455.63      0.92     0.91     0.91     1.46
 HUB    236.83   262.22    47.05     0.23  2390.44      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.86     1.05     7.48   535.63     1.02   528.44   494.90     0.87
 MEAN     7.81     1.05     7.43   534.58     1.01   527.28   494.42     0.90
 HUB      7.80     1.05     7.37   534.39     1.01   526.15   494.34     0.93

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.44    35.41    31.50     3.91     0.93     0.39     1.40
 MEAN    31.69    27.43    23.50     3.93     0.93     0.37     1.64
 HUB     36.34    10.34     6.50     3.84     0.93     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   333.5288   161.2714   291.9470  1116.5597     0.2987    -0.1965     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.8120     7.3491   525.9297   494.5608     0.9350    28.9162    33.0000     4.0838
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   300.1678    68.5436   292.2370  1118.3615     0.2684     0.0179     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     7.8092     7.4328   527.6278   494.5284   410.5396     0.0271     0.2994

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   291.9957     0.0000   291.9957  1118.7689     0.2610     0.2115     0.5109

Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     7.4470   528.0165   494.5125     0.0000     0.0600     0.0423     0.0538

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.8741     7.8032     1.0471   534.8654     7.7032   261.9484     2.0306

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  47953.531       0.421      85.838  317381.313   0.254100E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1126   Tt4 =   534.8654   T1  =   480.7365

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    336874.97    603.0157     80.1588      1.3953      0.8549     13.9067     1.1126     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 25666 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.160   EfDer =  0.995    SH =  0.336511E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     39.692    1971.592       6.513     491.412       1.000       1.000       0.980
  W Kg/sec =  18.042  Wdry =  39.678  WH2O = 0.013  lbm/sec   H2O =   0.190g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     87.200    2025.591       1.381       0.249      53.359      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  67688.727   31139.961       3.257     831.557     255.304     619.754       2.428

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   195.36    -0.07   195.36     0.18     0.38   364.66
 MEAN    17.06     0.00    -0.02   195.36    -0.07   195.36     0.18     0.33
 HUB     12.51     0.00    -0.02   195.36    -0.07   195.36     0.18     0.27

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     61.18    50.47    10.71   354.95   405.22     6.37   488.35   473.01     4.45
 MEAN    56.36    47.20     9.16   293.53   352.65     6.37   488.35   473.01     4.45
 HUB     47.78    38.62     9.16   215.24   290.73     6.37   488.35   473.01     4.45

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   340.74   211.24   267.36  1082.33      0.31     7.29     6.52    16.04
 MEAN    18.04   353.48   229.13   269.16  1080.86      0.33     7.43     6.80    12.53
 HUB     15.00   394.42   285.45   272.19  1078.62      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    354.95   303.53   143.70     0.28  4359.32      0.92     0.91
 MEAN   310.32   281.13    81.19     0.26  4133.71      0.92     0.91     0.91     1.42
 HUB    258.08   273.56    27.36     0.25  4282.52      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.06     1.08     6.59   503.46     1.02   494.14   480.21     3.73
 MEAN     7.03     1.08     6.53   502.84     1.02   492.80   479.89     3.90
 HUB      7.05     1.08     6.43   503.25     1.02   490.75   480.21     4.17

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.31    28.26    24.20     4.06     0.93     0.40     1.80
 MEAN    40.41    16.79    12.70     4.09     0.93     0.35     2.22
 HUB     46.36    -5.74    -9.30     3.56     0.93     0.23     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.995       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   368.4070   228.6834   288.8384  1080.2893     0.3410    -0.0596     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.0374     6.5001   492.2809   480.1075     3.9705    38.3699    35.4000    -2.9699

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   291.8511    71.3957   282.9836  1084.7325     0.2691     0.3352     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.0350     6.6943   496.3413   479.9576   554.9116     0.0145     0.4355

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   289.7169     0.0000   289.7169  1084.8337     0.2671     0.3473     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.6867   496.4411   479.9377     0.0000     0.0600     0.0396     0.3206
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8756     7.0218     1.0782   503.1832    11.7716   200.8568     1.5570

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  73280.594       0.582     164.369  394686.750   0.347880E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.307   EfDer =  1.000    SH =  0.357599E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     39.692    1971.592       7.022     503.183       1.000       1.000       0.980
 W Kg/sec =  18.042  Wdry =  39.678  WH2O = 0.014  lbm/sec   H2O =   0.210g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     81.841    2001.760       1.381       0.249      53.360      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  65134.176   31139.697       2.464     590.487     239.618     468.502       1.955

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   264.73    -0.09   264.73     0.24     0.41   358.97
 MEAN    18.08     0.00    -0.02   264.73    -0.09   264.73     0.24     0.38
 HUB     15.21     0.00    -0.02   264.73    -0.09   264.73     0.24     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.18    46.36     6.82   353.57   441.77     6.74   497.55   479.93     3.46
 MEAN    49.61    42.30     7.31   311.04   408.52     6.74   497.55   479.93     3.46
 HUB     44.68    37.84     6.84   261.69   372.31     6.74   497.55   479.93     3.46

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   322.96   151.25   285.35  1092.35      0.30     2.33     2.04     9.02
 MEAN    18.01   329.62   163.13   286.42  1091.52      0.30     2.40     2.13     7.35
 HUB     15.22   356.33   210.29   287.67  1090.71      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    351.33   348.51   200.09     0.32  3090.33      0.92     0.91
 MEAN   309.87   321.83   146.74     0.29  2939.59      0.92     0.91     0.91     1.38
 HUB    261.92   292.26    51.63     0.27  3202.62      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.43     1.06     6.99   511.72     1.02   503.35   484.69     2.88
 MEAN     7.41     1.05     6.96   511.31     1.02   502.58   484.47     2.95
 HUB      7.44     1.06     6.92   512.03     1.02   501.84   484.91     3.02

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     27.93    35.04    31.50     3.54     0.93     0.33     1.40
 MEAN    29.66    27.13    23.50     3.63     0.93     0.33     1.63
 HUB     36.17    10.17     6.50     3.67     0.93     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   361.9608   163.5865   322.8856  1089.9723     0.3321    -0.1639     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.4188     6.8804   501.1661   484.7328     3.0895    26.8686    30.6000     3.7314

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   317.1510    67.2383   309.9416  1092.6281     0.2903     0.0960     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4166     7.0008   503.6101   484.6465   491.5697     0.0147     0.2547

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   328.4280     0.0000   328.4280  1091.9888     0.3008     0.1472     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9596	503.0255	484.6461	0.0000	0.0600	0.0414	0.0080

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8713	7.4042	1.0544	511.6888	8.5059	251.3762	1.9487

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
52958.250	0.429	118.786	363831.563	0.361150E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.381 EfDer = 0.994 SH = 0.365813E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.692	1971.592	7.404	511.689	1.000	1.000	0.980

W Kg/sec = 18.042 Wdry = 39.677 WH2O = 0.015 lbm/sec H2O = 0.222g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.268	1985.053	1.381	0.249	53.360	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62958.566	31139.602	2.380	545.479	229.160	424.468	1.852

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	277.01	-0.10	277.01	0.25	0.40	347.66
MEAN	17.74	0.00	-0.02	277.01	-0.10	277.01	0.25	0.38	
HUB	15.05	0.00	-0.02	277.01	-0.10	277.01	0.25	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.27	46.36	4.91	345.31	442.76	7.09	505.53	484.58	2.74
MEAN	47.78	43.40	4.38	305.20	412.23	7.09	505.53	484.58	2.74
HUB	43.08	38.84	4.24	258.94	379.25	7.09	505.53	484.58	2.74

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	325.93	129.86	298.94	1099.82	0.30	2.26	1.98	8.75
MEAN	17.51	333.47	146.45	299.59	1099.36	0.30	2.34	2.07	6.78
HUB	14.85	361.14	200.41	300.43	1098.93	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	340.84	365.89	210.98	0.33	2574.45	0.92	0.91		
MEAN	301.21	337.20	154.75	0.31	2565.60	0.92	0.91	0.91	1.32
HUB	255.50	305.43	55.09	0.28	2977.51	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.75	1.05	7.30	518.80	1.01	510.27	488.38	2.37
MEAN	7.75	1.05	7.28	518.78	1.01	509.85	488.38	2.40
HUB	7.80	1.05	7.25	519.92	1.02	509.44	489.01	2.43

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	23.48	35.21	31.50	3.71	0.93	0.28	1.40
MEAN	26.05	27.32	23.50	3.82	0.92	0.29	1.62
HUB	33.71	10.39	6.50	3.89	0.92	0.33	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	368.1964	147.4151	337.3980	1097.6642	0.3354	-0.1766	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.7626	7.1883	508.2791	488.6295	2.5178	23.6014	31.5000	7.8986

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	337.1089	73.5380	328.9902	1099.5662	0.3066	0.0002	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.7574	7.2742	510.0398	488.5644	451.3937	0.0205	0.2126

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	342.9506	0.0000	342.9506	1099.2185	0.3120	0.0914	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.2408	509.7208	488.5435	0.0000	0.0600	0.0571	-0.0674

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8405	7.7393	1.0453	519.1664	7.4779	272.1880	2.1100

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
46562.656	0.401	104.441	366472.781	0.369143E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 1.783 EfDer = 0.974 SH = 0.373819E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.692	1971.592	7.739	519.166	1.000	1.000	0.980

W Kg/sec = 18.042 Wdry = 39.677 WH2O = 0.015 lbm/sec H2O = 0.233g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
75.424	1970.706	1.381	0.249	53.360	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
61214.641	31139.502	2.324	513.330	220.835	395.845	1.792

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	286.20	-0.10	286.20	0.26	0.40	331.22
MEAN	16.97	0.00	-0.02	286.20	-0.10	286.20	0.26	0.37	
HUB	14.32	0.00	-0.02	286.20	-0.10	286.20	0.26	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.19	46.36	2.83	331.38	437.93	7.39	512.59	488.47	2.24
MEAN	45.58	43.80	1.78	291.99	408.93	7.39	512.59	488.47	2.24
HUB	40.74	37.84	2.90	246.38	377.71	7.39	512.59	488.47	2.24

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	325.93	106.28	308.12	1106.16	0.29	2.16	1.89	8.34
MEAN	16.57	332.82	125.00	308.45	1105.96	0.30	2.24	1.97	6.35
HUB	13.89	358.56	181.88	309.01	1105.78	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	324.84	377.77	218.56	0.34	2008.39	0.92	0.89		
MEAN	285.16	347.55	160.16	0.31	2073.46	0.92	0.89	0.89	1.26
HUB	238.98	314.24	57.10	0.28	2527.70	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.01	1.03	7.55	524.72	1.01	516.19	491.32	2.02
MEAN	8.02	1.04	7.54	524.90	1.01	516.00	491.42	2.03
HUB	8.08	1.04	7.52	526.15	1.01	515.83	492.08	2.04

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	19.03	35.35	31.50	3.85	0.93	0.22	1.40
MEAN	22.06	27.44	23.50	3.94	0.91	0.24	1.62
HUB	30.48	10.47	6.50	3.97	0.91	0.29	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.974	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	361.5781	125.7059	339.0232	1104.6212	0.3273	-0.1443	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0317	7.4646	514.7557	491.6393	2.1029	20.3442	32.4000	12.0558

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	345.5186	77.4897	336.7172	1105.6014	0.3125	-0.0621	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.0224	7.5040	515.6674	491.5956	432.2457	0.0284	0.1760

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	343.2524	0.0000	343.2524	1105.7339	0.3104	0.0376	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.4859	515.7927	491.5448	0.0000	0.0600	0.0811	-0.0982

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7707	7.9960	1.0332	525.2542	6.0881	313.1230	2.4273

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
37912.016	0.359	85.037	379726.313	0.377108E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-0.624 EfDer = 0.940 SH = 0.382055E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.692	1971.592	7.996	525.254	1.000	1.000	0.980

W Kg/sec = 18.042 Wdry = 39.677 WH2O = 0.015 lbm/sec H2O = 0.244g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
73.429	1959.252	1.381	0.249	53.361	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
59861.477	31139.402	2.371	509.668	214.998	384.739	1.789

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	281.88	-0.10	281.88	0.25	0.38	313.22
MEAN	15.91	0.00	-0.02	281.88	-0.10	281.88	0.25	0.35	
HUB	13.07	0.00	-0.02	281.88	-0.10	281.88	0.25	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	48.20	47.36	0.84	315.20	422.93	7.65	518.87	491.47	1.89
MEAN	44.18	44.80	-0.62	273.79	393.03	7.65	518.87	491.47	1.89
HUB	38.59	38.84	-0.25	224.87	360.65	7.65	518.87	491.47	1.89

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	317.41	90.80	304.14	1112.01	0.29	2.05	1.78	7.43
MEAN	15.50	322.76	107.14	304.46	1111.81	0.29	2.13	1.86	5.75
HUB	12.59	344.31	159.73	305.02	1111.61	0.31	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	308.66	374.12	217.87	0.34	1630.68	0.92	0.86		
MEAN	266.64	343.71	159.50	0.31	1662.01	0.92	0.86	0.86	1.23
HUB	216.62	310.28	56.89	0.28	2012.23	0.92	0.86		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.21	1.03	7.77	529.76	1.01	521.67	493.71	1.74
MEAN	8.22	1.03	7.76	529.85	1.01	521.48	493.76	1.75
HUB	8.26	1.03	7.74	530.81	1.01	521.29	494.25	1.76

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	16.62	35.62	31.50	4.12	0.93	0.19	1.40
MEAN	19.39	27.65	23.50	4.15	0.90	0.21	1.64
HUB	27.64	10.56	6.50	4.06	0.90	0.25	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.940	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	364.4684	109.1078	347.7538	1109.6593	0.3285	-0.2488	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2209	7.6367	519.4736	493.9483	1.8553	17.4193	33.0000	15.5807

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   361.2358    82.4885   351.6915  1109.8646     0.3255    -0.2731     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.1954     7.6230   519.6617   493.8955   410.5396     0.0735     0.1440

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   351.4503     0.0000   351.4503  1110.4624     0.3165     0.0040     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.6390   520.2216   493.8539     0.0000     0.0600     0.1045    -0.2395

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6787     8.1806     1.0231   530.1399     4.8860   365.1613     2.8307

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  30428.369       0.319      68.251  402383.688   0.385557E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0788   Tt4 =   530.1399   T1  =   491.4120

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    241141.89    540.8846     87.1996      1.2561      0.8234      9.1598      1.0788     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 20047 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.578   EfDer =  0.999    SH =  0.619759E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     48.723    1793.828       7.939     506.410       1.000       1.000       0.980
  W Kg/sec =  22.147  Wdry =  48.693  WH2O = 0.030  lbm/sec   H2O =   0.414g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     89.141    1815.466       1.380       0.249      53.368      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  70310.383   38221.488       3.186     831.557     261.041     619.754       2.374

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   202.93    -0.07   202.93     0.19     0.35   326.83
 MEAN    17.06     0.00    -0.02   202.93    -0.07   202.93     0.19     0.31
 HUB     12.51     0.00    -0.02   202.93    -0.07   202.93     0.19     0.26

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.86    50.47     7.39   322.94   381.47     7.75   503.11   483.64     5.57
 MEAN    52.78    47.20     5.58   267.06   335.47     7.75   503.11   483.64     5.57
 HUB     43.99    38.62     5.37   195.83   282.06     7.75   503.11   483.64     5.57

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.03   171.89   280.56  1095.83      0.30     7.29     6.52    16.04
 MEAN    18.04   343.81   197.10   281.70  1094.99      0.31     7.43     6.80    12.53
 HUB     15.00   387.30   263.16   284.17  1093.30      0.35     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    322.94   318.64   151.06     0.29  3547.51      0.92     0.91
 MEAN   282.34   294.31    85.24     0.27  3556.10      0.92     0.91     0.91     1.27
 HUB    234.81   285.58    28.35     0.26  3948.23      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.41     1.06     7.91   515.32     1.02   506.63   488.78     5.03
 MEAN     8.41     1.06     7.86   515.34     1.02   505.86   488.84     5.15
 HUB      8.47     1.07     7.77   516.33     1.02   504.29   489.51     5.40

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.49    28.30    24.20     4.10     0.93     0.29     1.80
 MEAN    34.98    16.84    12.70     4.14     0.92     0.26     2.22
 HUB     42.80    -5.70    -9.30     3.60     0.92     0.15     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   360.7850   196.7177   302.4367  1094.3005     0.3297    -0.0736     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     8.4250     7.8220   505.2199   489.0573     5.2573    33.0417    35.4000     2.3583

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   307.6434    75.2590   298.2961  1097.3810     0.2803     0.2279     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     8.4229     7.9814   508.0703   488.8950   554.9116     0.0136     0.3486

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   305.3287     0.0000   305.3287  1097.4980     0.2782     0.2522     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     7.9741   508.1842   488.8715     0.0000     0.0600     0.0385     0.2155
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8729     8.4084     1.0591   515.6646     9.2552   222.8898     1.7278

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57677.258       0.553     158.809  474141.594   0.632340E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.133   EfDer =  0.987    SH =  0.642858E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     48.723    1793.828       8.408     515.664       1.000       1.000       0.980
 W Kg/sec =  22.147  Wdry =  48.692  WH2O = 0.031  lbm/sec   H2O =   0.440g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     84.931    1799.099       1.380       0.249      53.369      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68607.383   38221.141       2.374     590.487     248.717     468.502       1.884

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   278.85    -0.10   278.85     0.25     0.39   322.63
 MEAN    18.08     0.00    -0.02   278.85    -0.10   278.85     0.25     0.36
 HUB     15.21     0.00    -0.02   278.85    -0.10   278.85     0.25     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.09     46.36     2.73   321.69   425.80     8.05   509.43   488.83     4.72
 MEAN    45.43     42.30     3.13   283.00   397.37     8.05   509.43   488.83     4.72
 HUB     40.50     37.84     2.66   238.10   366.73     8.05   509.43   488.83     4.72

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   321.96   105.74   304.09  1102.44      0.29     2.33     2.04     9.02
 MEAN    18.01   329.15   125.35   304.35  1102.30      0.30     2.40     2.13     7.35
 HUB     15.22   355.51   182.96   304.81  1102.17      0.32     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    319.66   371.80   213.91     0.34  2161.24      0.92     0.90
 MEAN   281.93   342.26   156.58     0.31  2259.35      0.92     0.90     0.90     1.25
 HUB    238.30   309.79    55.34     0.28  2786.70      0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.70     1.03     8.21   521.09     1.01   512.78   491.76     4.26
 MEAN     8.72     1.04     8.20   521.34     1.01   512.65   491.91     4.28
 HUB      8.79     1.05     8.19   522.66     1.01   512.52   492.66     4.29

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     19.17    35.12    31.50     3.62     0.93     0.22     1.40
 MEAN    22.39    27.22    23.50     3.72     0.91     0.24     1.63
 HUB     30.97    10.29     6.50     3.79     0.91     0.28     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.987       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   365.7918   125.7057   343.5138  1100.4846     0.3324    -0.1938     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.7300     8.0954   510.9640   492.1976     4.4995    20.0996    30.6000    10.5004

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   339.3565    71.9460   331.6423  1102.0972     0.3079    -0.0443     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.7217     8.1740   512.4594   492.1026   491.5697     0.0254     0.1609

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   352.0259     0.0000   352.0259  1101.3381     0.3196     0.0235     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1103	511.7567	492.1022	0.0000	0.0600	0.0714	-0.1627

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7982	8.6969	1.0343	521.6993	6.0349	303.3949	2.3519

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
37613.832	0.368	103.566	439664.781	0.646622E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =-0.254 EfDer = 0.946 SH = 0.651441E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
48.723	1793.828	8.697	521.699	1.000	1.000	0.980

W Kg/sec = 22.147 Wdry = 48.692 WH2O = 0.032 lbm/sec H2O = 0.454g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
82.592	1788.664	1.380	0.249	53.369	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
67360.078	38221.012	2.255	545.479	241.870	424.468	1.755

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	296.37	-0.10	296.37	0.27	0.39	313.26
MEAN	17.74	0.00	-0.02	296.37	-0.10	296.37	0.27	0.37	
HUB	15.05	0.00	-0.02	296.37	-0.10	296.37	0.27	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	46.68	46.36	0.32	314.18	431.98	8.28	514.65	491.96	4.06
MEAN	43.15	43.40	-0.25	277.68	406.20	8.28	514.65	491.96	4.06
HUB	38.49	38.84	-0.35	235.59	378.67	8.28	514.65	491.96	4.06

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	333.86	80.41	324.03	1106.71	0.30	2.26	1.98	8.75
MEAN	17.51	340.61	105.84	323.75	1107.01	0.31	2.34	2.07	6.78
HUB	14.85	366.74	172.19	323.81	1107.32	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	310.11	397.19	229.70	0.36	1594.89	0.92	0.87		
MEAN	274.05	364.84	168.21	0.33	1854.72	0.92	0.87	0.87	1.19
HUB	232.46	329.37	60.27	0.30	2558.60	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.91	1.02	8.37	525.71	1.01	516.76	494.07	3.81
MEAN	8.94	1.03	8.38	526.36	1.01	517.05	494.41	3.78
HUB	9.04	1.04	8.39	528.13	1.01	517.34	495.35	3.74

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	13.94	35.33	31.50	3.83	0.93	0.15	1.40
MEAN	18.10	27.45	23.50	3.95	0.90	0.18	1.62
HUB	28.00	10.54	6.50	4.04	0.90	0.25	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.946	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	380.5140	106.5356	365.2959	1104.9337	0.3444	-0.2082	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.9576	8.2611	515.1135	494.7067	3.9951	16.2589	31.5000	15.2411

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	367.2376	80.1104	358.3933	1105.7924	0.3321	-0.1493	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.9414	8.2926	515.9097	494.6373	451.3937	0.0377	0.1165

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   374.5201     0.0000   374.5201  1105.3263     0.3388    -0.0411     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2325   515.4763   494.5993     0.0000     0.0600     0.1022    -0.2522

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6737     8.9037     1.0238   526.7295     5.0305   344.5878     2.6712

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  31355.488       0.326      86.334  445227.188   0.655060E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =-3.343   EfDer =  0.887    SH =  0.659793E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     48.723    1793.828       8.904     526.729       1.000       1.000       0.980
 W Kg/sec =  22.147  Wdry =  48.691  WH2O = 0.032  lbm/sec   H2O =   0.464g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     81.062    1780.102       1.380       0.249      53.370      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66658.594   38220.887       2.162     513.330     237.391     395.845       1.667

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   311.65    -0.11   311.65     0.28     0.39   299.18
 MEAN    16.97     0.00    -0.02   311.65    -0.11   311.65     0.28     0.37
 HUB     14.32     0.00    -0.02   311.65    -0.11   311.65     0.28     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     44.06    46.36    -2.30   301.50   433.70     8.43   518.94   494.43     3.59
 MEAN    40.46    43.80    -3.34   265.66   409.59     8.43   518.94   494.43     3.59
 HUB     35.74    37.84    -2.10   224.17   383.96     8.43   518.94   494.43     3.59

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   344.15    53.16   340.02  1109.90     0.31     2.16     1.89     8.34
 MEAN    16.57   349.14    82.08   339.35  1110.56     0.31     2.24     1.97     6.35
 HUB     13.89   372.40   153.77   339.17  1111.20     0.34     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    295.55   417.57   242.39     0.38  1005.72     0.92     0.81
 MEAN   259.45   382.91   177.37     0.34  1362.24     0.92     0.81     0.81     1.14
 HUB    217.44   345.09    63.67     0.31  2137.41     0.92     0.81

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.03     1.01     8.46   529.26     1.00   519.75   495.74     3.50
 MEAN     9.08     1.02     8.48   530.15     1.01   520.37   496.19     3.44
 HUB      9.17     1.03     8.50   532.10     1.01   520.97   497.18     3.37

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      8.89    35.48    31.50     3.98     0.93     0.08     1.40
 MEAN    13.60    27.59    23.50     4.09     0.89     0.13     1.62
 HUB     24.39    10.63     6.50     4.13     0.89     0.20     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.887       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   382.7773    82.5437   373.7714  1108.8168     0.3452    -0.1708     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.0869     8.3772   518.7473   496.4453     3.5986    12.4533    32.4000    19.9467

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   383.3309    85.9699   373.5663  1108.7850     0.3457    -0.2028     2.2705
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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.0633     8.3534   518.7129   496.4076   432.2457     0.0485     0.0804

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   381.7596     0.0000   381.7596  1108.8885     0.3443    -0.0916     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.3122   518.8093   496.3175     0.0000     0.0600     0.1311    -0.2698

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.4678     9.0125     1.0122   530.5012     3.7720   425.3912     3.2976

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  23512.447       0.269      64.739  463846.594   0.663362E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-6.210   EfDer =  0.824    SH =  0.668313E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     48.723    1793.828       9.012     530.501       1.000       1.000       0.980
 W Kg/sec =  22.147  Wdry =  48.691  WH2O = 0.033  lbm/sec   H2O =   0.473g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.370    1773.763       1.380       0.249      53.370      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66318.391   38220.758       2.165     509.668     235.367     384.739       1.635

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   312.29    -0.11   312.29     0.28     0.38   283.57
 MEAN   15.91     0.00    -0.02   312.29    -0.11   312.29     0.28     0.36
 HUB    13.07     0.00    -0.02   312.29    -0.11   312.29     0.28     0.34

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    42.57    47.36    -4.79   286.78   424.07     8.54   522.68   496.14     3.22
 MEAN   38.59    44.80    -6.21   249.10   399.54     8.54   522.68   496.14     3.22
 HUB    33.24    38.84    -5.60   204.60   373.40     8.54   522.68   496.14     3.22

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   343.02    35.08   341.23  1112.97      0.31     2.05     1.78     7.43
 MEAN   15.50   346.31    62.94   340.54  1113.70      0.31     2.13     1.86     5.75
 HUB    12.59   365.30   132.52   340.41  1114.40      0.33     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   280.83   420.51   245.76     0.38   631.29      0.92     0.75
 MEAN  242.60   385.03   179.66     0.35   977.18      0.92     0.75     0.75     1.10
 HUB   197.09   346.48    64.56     0.31  1669.88      0.92     0.75

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     9.09     1.01     8.51   532.09     1.00   522.65   496.96     3.22
 MEAN    9.13     1.01     8.54   532.96     1.00   523.33   497.37     3.16
 HUB     9.21     1.02     8.56   534.70     1.01   523.99   498.23     3.09

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     5.87    35.76    31.50     4.26     0.93     0.04     1.40
 MEAN   10.47    27.81    23.50     4.31     0.87     0.08     1.64
 HUB    21.27    10.74     6.50     4.24     0.87     0.16     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.824       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   395.5756    64.0972   390.3481  1110.8883     0.3561    -0.2830     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.1287     8.3725   520.6930   497.6367     3.3991     9.3251    33.0000    23.6749
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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   408.7989    93.3496   397.9980  1109.9849     0.3683    -0.4403     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     9.0742     8.2731   519.8392   497.5880   410.5396     0.1106     0.0535

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   397.5820     0.0000   397.5820  1110.7625     0.3579    -0.1010     0.5109

Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     8.2961   520.5646   497.5157     0.0000     0.0600     0.1449    -0.4020

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
 0.2419     9.0535     1.0045   533.2455     2.7445   538.5676     4.1749

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  17108.584       0.217      47.107  493811.656   0.671954E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0530   Tt4 =   533.2455   T1  =   506.4096

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    167267.61    460.5552     89.1407      1.1404      0.6954      5.5778      1.0530     37.3740
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100µm, ISA +18R

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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
**********************************************************************

       Fan Core + 4 Stage LPC 10% 39000 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.145   EfDer =  0.957    SH =  0.454452E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     26.819    2405.688       4.265     457.737       1.000       1.000       0.980
  W Kg/sec =  12.191  Wdry =  26.818  WH2O = 0.001  lbm/sec   H2O =   0.018g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     86.842    2560.871       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  65038.973   21043.451       3.271     831.557     254.197     619.754       2.438

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   187.71    -0.06   187.71     0.18     0.45   461.02
 MEAN    17.06     0.00    -0.02   187.71    -0.06   187.71     0.18     0.39
 HUB     12.51     0.00    -0.02   187.71    -0.06   187.71     0.18     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.57    50.47    16.10   433.10   472.09      4.17   454.90   448.21     1.74
 MEAN    62.34    47.20    15.14   358.15   404.42      4.17   454.90   448.21     1.74
 HUB     54.45    38.62    15.83   262.63   322.87      4.17   454.90   448.21     1.74

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   389.08   297.03   251.31  1051.48      0.37     7.29     6.52    16.04
 MEAN    18.04   394.32   301.11   254.60  1048.45      0.38     7.43     6.80    12.53
 HUB     15.00   427.87   340.45   259.17  1044.69      0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    433.10   285.78   136.07     0.27  6128.98      0.92     0.88
 MEAN   378.64   266.14    77.53     0.25  5431.98      0.92     0.88     0.88     1.74
 HUB    314.90   260.43    25.54     0.25  5107.52      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.91     1.15     4.47   478.44     1.05   466.26   462.20     1.11
 MEAN     4.83     1.13     4.39   476.08     1.04   463.58   460.71     1.23
 HUB      4.80     1.12     4.28   474.99     1.04   460.26   460.03     1.40

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.77    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    49.78    16.94    12.70     4.24     0.95     0.51     2.22
 HUB     52.72    -5.63    -9.30     3.67     0.95     0.38     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.957       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   406.0583   300.5277   273.0686  1048.0610     0.3874    -0.0370     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8413     4.3708   463.2391   460.9779     1.2439    47.7408    35.4000   -12.3408

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   271.0790    66.3142   262.8426  1056.3409     0.2566     0.5077     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8299     4.6164   470.5904   460.9021   554.9116     0.0344     0.5999

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   269.9224     0.0000   269.9224  1056.3879     0.2555     0.4799     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.5966	470.6406	460.8587	0.0000	0.0600	0.0829	0.4652

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8202	4.8073	1.1272	476.5003	18.7637	169.5071	1.3140

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
116659.930	0.622	176.808	281326.375	0.461030E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =14.673 EfDer = 0.961 SH = 0.467062E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.819	2405.688	4.807	476.500	1.000	1.000	0.980

W Kg/sec = 12.191 Wdry = 26.818 WH2O = 0.001 lbm/sec H2O = 0.020g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.603	2509.954	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60715.422	21043.439	2.566	590.487	230.083	468.502	2.036

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	246.77	-0.08	246.77	0.23	0.47	450.10
MEAN	18.08	0.00	-0.02	246.77	-0.08	246.77	0.23	0.43	
HUB	15.21	0.00	-0.02	246.77	-0.08	246.77	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.23	46.36	13.87	431.42	497.08	4.63	471.60	460.85	0.92
MEAN	56.97	42.30	14.67	379.53	452.77	4.63	471.60	460.85	0.92
HUB	52.31	37.84	14.47	319.31	403.62	4.63	471.60	460.85	0.92

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	357.96	246.17	259.87	1070.36	0.33	2.33	2.04	9.02
MEAN	18.01	358.03	243.50	262.47	1067.96	0.34	2.40	2.13	7.35
HUB	15.22	379.98	271.99	265.35	1065.59	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	428.69	317.57	182.52	0.30	5028.51	0.92	0.88		
MEAN	378.09	294.97	134.59	0.28	4386.99	0.92	0.88	0.88	1.69
HUB	319.59	269.59	47.60	0.25	4141.72	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.38	1.12	4.98	493.48	1.04	483.18	471.11	0.60
MEAN	5.30	1.10	4.91	491.31	1.03	481.01	469.86	0.65
HUB	5.27	1.10	4.83	490.49	1.03	478.87	469.39	0.70

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	43.45	35.08	31.50	3.58	0.93	0.54	1.40
MEAN	42.85	27.15	23.50	3.65	0.95	0.51	1.63
HUB	45.71	10.17	6.50	3.67	0.95	0.50	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.961	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	383.3246	244.1849	295.4852	1066.7675	0.3593	-0.1093	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3121	4.8641	479.9431	470.1226	0.6727	39.5699	30.6000	-8.9699

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	285.9402	60.6214	279.4402	1072.5756	0.2666	0.3578	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.3063	5.0538	485.1847	470.0801	491.5697	0.0241	0.4553

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	296.3677	0.0000	296.3677	1072.0277	0.2765	0.3490	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0204	484.6964	470.0494	0.0000	0.0600	0.0626	0.2762

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8368	5.2905	1.1005	491.7599	15.2600	191.2210	1.4823

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
94887.352	0.516	143.810	255454.859	0.468908E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.679 EfDer = 0.976 SH = 0.468987E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.819	2405.688	5.291	491.760	1.000	1.000	0.980

W Kg/sec = 12.191 Wdry = 26.818 WH2O = 0.001 lbm/sec H2O = 0.021g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.558	2470.705	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56933.711	21043.439	2.568	545.479	212.390	424.468	1.999

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	250.50	-0.09	250.50	0.23	0.46	432.72
MEAN	17.74	0.00	-0.02	250.50	-0.09	250.50	0.23	0.42	
HUB	15.05	0.00	-0.02	250.50	-0.09	250.50	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.27	46.36	12.91	421.34	490.26	5.10	486.71	470.04	0.53
MEAN	56.08	43.40	12.68	372.39	448.88	5.10	486.71	470.04	0.53
HUB	51.60	38.84	12.76	315.95	403.27	5.10	486.71	470.04	0.53

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	350.04	230.13	263.76	1085.88	0.32	2.26	1.98	8.75
MEAN	17.51	352.07	230.59	266.04	1083.83	0.32	2.34	2.07	6.78
HUB	14.85	375.93	263.06	268.56	1081.82	0.35	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	415.88	322.61	185.75	0.30	4560.58	0.92	0.89		
MEAN	367.53	299.21	136.93	0.28	4038.43	0.92	0.89	0.89	1.64
HUB	311.75	272.94	48.69	0.25	3907.79	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.85	1.11	5.45	507.16	1.03	497.30	478.56	0.37
MEAN	5.78	1.09	5.38	505.40	1.03	495.43	477.63	0.40
HUB	5.76	1.09	5.31	504.95	1.03	493.59	477.40	0.42

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.10	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	40.92	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.41	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	378.5260	232.1067	299.0124	1082.5992	0.3496	-0.1172	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7929	5.3290	494.3142	477.8604	0.4091	37.8202	31.5000	-6.3202

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	294.3030	64.2002	287.2152	1087.5767	0.2706	0.3059	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7892	5.5056	498.8710	477.8309	451.3937	0.0187	0.4299

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	299.2657	0.0000	299.2657	1087.3102	0.2752	0.3335	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4837	498.6342	477.8026	0.0000	0.0600	0.0500	0.2537

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8571	5.7761	1.0918	505.8357	14.0763	196.7151	1.5249

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
87535.805	0.506	132.668	253844.234	0.470779E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.084 EfDer = 0.986 SH = 0.470853E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.819	2405.688	5.776	505.836	1.000	1.000	0.980

W Kg/sec = 12.191 Wdry = 26.818 WH2O = 0.001 lbm/sec H2O = 0.023g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
67.403	2436.086	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53601.109	21043.438	2.602	513.330	197.303	395.845	2.006

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	250.60	-0.09	250.60	0.23	0.44	409.43
MEAN	16.97	0.00	-0.02	250.60	-0.09	250.60	0.23	0.40	
HUB	14.32	0.00	-0.02	250.60	-0.09	250.60	0.23	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.22	46.36	11.86	404.34	475.77	5.57	500.79	477.79	0.33
MEAN	54.88	43.80	11.08	356.28	435.66	5.57	500.79	477.79	0.33
HUB	50.19	37.84	12.35	300.63	391.45	5.57	500.79	477.79	0.33

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	337.10	210.76	263.10	1099.78	0.31	2.16	1.89	8.34
MEAN	16.57	339.05	211.31	265.15	1097.93	0.31	2.24	1.97	6.35
HUB	13.89	361.43	243.18	267.39	1096.11	0.33	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	396.36	321.98	185.60	0.29	3980.76	0.92	0.90		
MEAN	347.94	298.28	136.63	0.27	3503.70	0.92	0.90	0.90	1.60
HUB	291.60	271.73	48.42	0.25	3379.05	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.29	1.09	5.90	519.27	1.03	510.14	484.71	0.25
MEAN	6.23	1.08	5.84	517.66	1.02	508.42	483.91	0.26
HUB	6.21	1.08	5.77	517.24	1.02	506.74	483.71	0.27

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.70	35.20	31.50	3.70	0.93	0.48	1.40
MEAN	38.55	27.26	23.50	3.76	0.94	0.46	1.62
HUB	42.29	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.986	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	360.1472	212.4991	290.7750	1097.0625	0.3283	-0.0928	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.2415	5.7981	507.6320	484.1063	0.2669	36.1594	32.4000	-3.7594

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   292.0544    65.4993   284.6148  1100.9125     0.2653     0.2685     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2396     5.9455   511.2028   484.0884   432.2457     0.0146     0.4083

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   289.7179     0.0000   289.7179  1101.0227     0.2631     0.3191     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9396   511.3121   484.0627     0.0000     0.0600     0.0414     0.2542

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8703     6.2286     1.0783   518.0606    12.2254   212.1394     1.6445

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  76034.469       0.484     115.237  259693.906   0.472621E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.624   EfDer =  0.993    SH =  0.472763E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.819    2405.688       6.229     518.060       1.000       1.000       0.980
 W Kg/sec =  12.191  Wdry =  26.818  WH2O = 0.001  lbm/sec   H2O =   0.024g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     63.257    2407.172       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50758.523   21043.434       2.752     509.668     185.171     384.739       2.078

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   239.02    -0.08   239.02     0.22     0.41   384.83
 MEAN    15.91     0.00    -0.02   239.02    -0.08   239.02     0.22     0.37
 HUB     13.07     0.00    -0.02   239.02    -0.08   239.02     0.22     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.15    47.36    10.79   384.60   452.89      6.03   513.47   484.06     0.22
 MEAN    54.42    44.80     9.62   334.07   410.84      6.03   513.47   484.06     0.22
 HUB     48.95    38.84    10.11   274.39   363.95      6.03   513.47   484.06     0.22

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   320.09   197.98   251.52  1112.27      0.29     2.05     1.78     7.43
 MEAN    15.50   319.23   194.01   253.52  1110.35      0.29     2.13     1.86     5.75
 HUB     12.59   335.95   217.95   255.65  1108.47      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    376.62   308.50   178.64     0.28  3553.36      0.92     0.91
 MEAN   325.35   285.52   131.34     0.26  3007.95      0.92     0.91     0.91     1.59
 HUB    264.31   259.82    46.36     0.23  2745.04      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.72     1.08     6.35   530.06     1.02   521.82   489.89     0.17
 MEAN     6.64     1.07     6.27   528.21     1.02   520.02   489.01     0.18
 HUB      6.60     1.06     6.20   527.33     1.02   518.25   488.59     0.19

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.21    35.38    31.50     3.88     0.93     0.47     1.40
 MEAN    37.43    27.39    23.50     3.89     0.94     0.45     1.64
 HUB     40.45    10.28     6.50     3.78     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   349.6911   197.5645   288.5345  1108.9347     0.3153    -0.1731     2.0437
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    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6457     6.2086   518.7011   489.1532     0.1913    34.4001    33.0000    -1.4001

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   294.9098    67.3429   287.1180  1111.9645     0.2652     0.1502     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6437     6.3307   521.5400   489.1392   410.5396     0.0252     0.3840

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   286.8710     0.0000   286.8710  1112.3583     0.2579     0.3073     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3429   521.9160   489.1275     0.0000     0.0600     0.0373     0.1823

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8793     6.6391     1.0659   528.5318    10.4717   231.8381     1.7972

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  65135.250       0.459      98.718  272254.750   0.474599E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1547   Tt4 =   528.5318   T1  =   457.7372

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    440252.81    667.2422     86.8419      1.5568      0.8403     15.1447      1.1547     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 38334 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.249   EfDer =  0.956    SH =  0.440675E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.842    2330.547       4.199     451.563       1.000       1.000       0.980
  W Kg/sec =  11.747  Wdry =  25.841  WH2O = 0.001  lbm/sec   H2O =   0.017g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     84.406    2497.787       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  62728.457   20276.795       3.366     831.557     247.067     619.754       2.508

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   181.04    -0.06   181.04     0.18     0.44   449.67
 MEAN    17.06     0.00    -0.02   181.04    -0.06   181.04     0.18     0.38
 HUB     12.51     0.00    -0.02   181.04    -0.06   181.04     0.18     0.30

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.66    50.47    16.19   419.57   457.02     4.11   448.93   443.83     2.23
 MEAN    62.45    47.20    15.25   346.97   391.42     4.11   448.93   443.83     2.23
 HUB     54.57    38.62    15.95   254.43   312.32     4.11   448.93   443.83     2.23

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   376.81   288.04   242.95  1043.93      0.36     7.29     6.52    16.04
 MEAN    18.04   381.72   291.92   245.96  1041.07      0.37     7.43     6.80    12.53
 HUB     15.00   413.86   329.70   250.15  1037.53      0.40     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    419.57   276.27   131.53     0.26  5943.50      0.92     0.88
 MEAN   366.81   257.11    74.90     0.25  5266.08      0.92     0.88     0.88     1.75
 HUB    305.07   251.36    24.64     0.24  4946.35      0.92     0.88

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP       4.80     1.14     4.39   471.01     1.04   459.59   457.65     1.44
 MEAN      4.73     1.13     4.32   468.79     1.04   457.07   456.17     1.59
 HUB       4.70     1.12     4.21   467.75     1.04   453.97   455.48     1.80

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      49.85    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN     49.88    16.94    12.70     4.24     0.95     0.52     2.22
 HUB      52.81    -5.62    -9.30     3.68     0.95     0.38     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.956       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   393.0095   291.3496   263.7648  1040.7074     0.3776    -0.0370     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.7379     4.2991   456.7588   456.4299     1.6073    47.8448    35.4000   -12.4448

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   262.3339    64.1749   254.3633  1048.5220     0.2502     0.5088     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.7276     4.5287   463.6468   456.3578   554.9116     0.0338     0.6005

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   261.1896     0.0000   261.1896  1048.5680     0.2491     0.4797     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.5097   463.6948   456.3205     0.0000     0.0600     0.0836     0.4651
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8190     4.7059     1.1207   469.1816    17.6189   169.0683     1.3106

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 109540.523       0.622     159.970  273652.031   0.446974E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.696   EfDer =  0.961    SH =  0.449531E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.842    2330.547       4.706     469.181       1.000       1.000       0.980
 W Kg/sec =  11.747  Wdry =  25.841  WH2O = 0.001  lbm/sec   H2O =   0.019g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.774    2450.448       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58767.527   20276.787       2.628     590.487     224.728     468.502       2.085

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   238.86    -0.08   238.86     0.23     0.46   439.43
 MEAN    18.08     0.00    -0.02   238.86    -0.08   238.86     0.23     0.42
 HUB     15.21     0.00    -0.02   238.86    -0.08   238.86     0.23     0.37

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.26    46.36    13.90   417.94   481.45     4.54   464.59   456.32     1.19
 MEAN    57.00    42.30    14.70   367.67   438.52     4.54   464.59   456.32     1.19
 HUB     52.33    37.84    14.49   309.34   390.89     4.54   464.59   456.32     1.19

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.42   346.90   238.24   252.16  1061.75     0.33     2.33     2.04     9.02
 MEAN    18.01   346.97   235.79   254.55  1059.48     0.33     2.40     2.13     7.35
 HUB     15.22   368.20   263.47   257.20  1057.25     0.35     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    415.30   308.11   177.06     0.29  4866.51     0.92     0.88
 MEAN   366.28   286.05   130.50     0.27  4247.99     0.92     0.88     0.88     1.69
 HUB    309.60   261.31    46.13     0.25  4012.08     0.92     0.88

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.23     1.11     4.87   485.10     1.03   475.42   466.48     0.79
 MEAN     5.17     1.10     4.80   483.08     1.03   473.40   465.25     0.85
 HUB      5.14     1.09     4.73   482.31     1.03   471.40   464.79     0.91

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.37    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN    42.81    27.14    23.50     3.64     0.95     0.51     1.63
 HUB     45.69    10.17     6.50     3.67     0.95     0.50     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.961       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   371.4506   236.4480   286.4749  1058.3558     0.3510    -0.1095     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   5.1757     4.7583   472.3990   465.5094     0.8784    39.5353    30.6000    -8.9353

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   277.5911    58.8513   271.2809  1063.8287     0.2609     0.3565     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     5.1706     4.9346   477.2983   465.4689   491.5697     0.0235     0.4539

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   287.6496     0.0000   287.6496  1063.3123     0.2705     0.3475     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9034	476.8411	465.4426	0.0000	0.0600	0.0625	0.2745

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8366	5.1558	1.0956	483.4953	14.3142	191.2168	1.4823

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
89003.063	0.516	129.978	248723.203	0.451239E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.616 EfDer = 0.976 SH = 0.451239E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.842	2330.547	5.156	483.495	1.000	1.000	0.980

W Kg/sec = 11.747 Wdry = 25.841 WH2O = 0.001 lbm/sec H2O = 0.020g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
71.137	2413.904	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55285.809	20276.785	2.620	545.479	208.228	424.468	2.038

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	243.25	-0.08	243.25	0.23	0.45	422.77
MEAN	17.74	0.00	-0.02	243.25	-0.08	243.25	0.23	0.41	
HUB	15.05	0.00	-0.02	243.25	-0.08	243.25	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.21	46.36	12.85	408.18	475.24	4.97	478.74	465.43	0.70
MEAN	56.02	43.40	12.62	360.76	435.18	4.97	478.74	465.43	0.70
HUB	51.53	38.84	12.69	306.08	391.03	4.97	478.74	465.43	0.70

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	339.49	222.18	256.70	1076.37	0.32	2.26	1.98	8.75
MEAN	17.51	341.55	222.88	258.80	1074.45	0.32	2.34	2.07	6.78
HUB	14.85	364.74	254.66	261.12	1072.56	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	402.89	313.93	180.72	0.29	4402.98	0.92	0.89		
MEAN	356.05	291.05	133.16	0.27	3903.39	0.92	0.89	0.89	1.64
HUB	302.02	265.38	47.36	0.25	3782.95	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.67	1.10	5.30	497.90	1.03	488.63	473.88	0.49
MEAN	5.61	1.09	5.24	496.26	1.03	486.88	472.96	0.52
HUB	5.60	1.09	5.17	495.87	1.03	485.17	472.75	0.55

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.88	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	40.74	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.28	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	367.2766	224.3450	290.7944	1073.2769	0.3422	-0.1179	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6215	5.1893	485.8295	473.1978	0.5412	37.6498	31.5000	-6.1498

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	286.5534	62.5097	279.6523	1077.9540	0.2658	0.3019	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6183	5.3524	490.0738	473.1696	451.3937	0.0181	0.4265

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	291.3419	0.0000	291.3419	1077.7023	0.2703	0.3302	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3320	489.8513	473.1451	0.0000	0.0600	0.0493	0.2497

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8578	5.6061	1.0873	496.6768	13.1819	197.2764	1.5293

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
81970.391	0.505	119.707	247461.750	0.452915E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.941 EfDer = 0.987 SH = 0.453066E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.842	2330.547	5.606	496.677	1.000	1.000	0.980

W Kg/sec = 11.747 Wdry = 25.841 WH2O = 0.001 lbm/sec H2O = 0.022g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
66.308	2381.656	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52203.762	20276.785	2.645	513.330	194.096	395.845	2.039

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	244.07	-0.08	244.07	0.23	0.43	400.29
MEAN	16.97	0.00	-0.02	244.07	-0.08	244.07	0.23	0.39	
HUB	14.32	0.00	-0.02	244.07	-0.08	244.07	0.23	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.08	46.36	11.72	391.71	461.60	5.41	491.89	473.14	0.44
MEAN	54.74	43.80	10.94	345.15	422.80	5.41	491.89	473.14	0.44
HUB	50.04	37.84	12.20	291.24	380.05	5.41	491.89	473.14	0.44

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	327.24	202.91	256.74	1089.46	0.30	2.16	1.89	8.34
MEAN	16.57	329.30	203.83	258.63	1087.73	0.30	2.24	1.97	6.35
HUB	13.89	351.17	235.29	260.70	1086.03	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	383.98	314.17	181.07	0.29	3832.48	0.92	0.90		
MEAN	337.08	290.94	133.25	0.27	3379.70	0.92	0.90	0.90	1.59
HUB	282.49	264.94	47.20	0.24	3269.36	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.08	1.09	5.72	509.21	1.03	500.60	479.98	0.33
MEAN	6.03	1.07	5.66	507.73	1.02	499.01	479.20	0.35
HUB	6.01	1.07	5.60	507.37	1.02	497.45	479.02	0.37

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.32	35.19	31.50	3.69	0.93	0.47	1.40
MEAN	38.24	27.26	23.50	3.76	0.94	0.46	1.62
HUB	42.07	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.987	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	349.9085	204.9778	283.5843	1086.9004	0.3219	-0.0937	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.0358	5.6228	498.2594	479.3973	0.3568	35.8598	32.4000	-3.4598

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	285.1121	63.9423	277.8494	1090.5018	0.2615	0.2619	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.0343	5.7578	501.5680	479.3800	432.2457	0.0140	0.4030

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	282.8121	0.0000	282.8121	1090.6096	0.2593	0.3138	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.7524	501.6730	479.3575	0.0000	0.0600	0.0407	0.2479

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8713	6.0241	1.0746	508.1041	11.4278	213.3545	1.6539

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
71068.977	0.482	103.787	253453.797	0.454714E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.408 EfDer = 0.994 SH = 0.454850E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.842	2330.547	6.024	508.104	1.000	1.000	0.980

W Kg/sec = 11.747 Wdry = 25.841 WH2O = 0.001 lbm/sec H2O = 0.023g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.413	2354.722	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49565.109	20276.783	2.790	509.668	182.698	384.739	2.106

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	233.40	-0.08	233.40	0.21	0.40	376.44
MEAN	15.91	0.00	-0.02	233.40	-0.08	233.40	0.21	0.37	
HUB	13.07	0.00	-0.02	233.40	-0.08	233.40	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.94	47.36	10.58	372.59	439.73	5.84	503.72	479.35	0.30
MEAN	54.21	44.80	9.41	323.64	399.08	5.84	503.72	479.35	0.30
HUB	48.72	38.84	9.88	265.82	353.80	5.84	503.72	479.35	0.30

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	310.93	190.12	246.03	1101.23	0.28	2.05	1.78	7.43
MEAN	15.50	310.36	186.75	247.88	1099.44	0.28	2.13	1.86	5.75
HUB	12.59	326.88	210.76	249.86	1097.67	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	364.86	301.77	174.74	0.27	3412.30	0.92	0.91		
MEAN	315.19	279.18	128.44	0.25	2895.47	0.92	0.91	0.91	1.58
HUB	256.05	253.93	45.29	0.23	2654.54	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.47	1.07	6.13	519.26	1.02	511.49	485.10	0.24
MEAN	6.40	1.06	6.06	517.57	1.02	509.83	484.26	0.25
HUB	6.37	1.06	5.99	516.79	1.02	508.19	483.86	0.26

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.70	35.38	31.50	3.88	0.93	0.47	1.40
MEAN	36.99	27.39	23.50	3.89	0.94	0.44	1.64
HUB	40.15	10.27	6.50	3.77	0.94	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	340.1794	190.1754	282.0556	1098.0685	0.3098	-0.1747	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.4076	6.0003	508.5701	484.3972	0.2576	33.9897	33.0000	-0.9897

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   288.5300    65.8861   280.9067  1100.8831     0.2621     0.1407     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.4061     6.1111   511.1809   484.3841   410.5396     0.0245     0.3771

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   280.6768     0.0000   280.6768  1101.2643     0.2549     0.3000     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.1225   511.5402   484.3731     0.0000     0.0600     0.0369     0.1729

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8800     6.4017     1.0627   517.8740     9.7704   233.8002     1.8124

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  60767.637       0.456      88.743  265989.781   0.456543E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1468   Tt4 =   517.8740   T1  =   451.5633

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    412350.59    602.1852     84.4062      1.5245      0.8406     15.2491      1.1468     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 37357 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.296   EfDer =  0.956    SH =  0.420292E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     26.433    2302.100       4.337     449.674       1.000       1.000       0.980
  W Kg/sec =  12.015  Wdry =  26.432  WH2O = 0.001  lbm/sec   H2O =   0.017g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.416    2472.477       1.381       0.248      53.350      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  61839.848   20740.453       3.406     831.557     244.169     619.754       2.538

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   178.48    -0.06   178.48     0.17     0.44   445.11
 MEAN    17.06     0.00    -0.02   178.48    -0.06   178.48     0.17     0.38
 HUB     12.51     0.00    -0.02   178.48    -0.06   178.48     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.70    50.47    16.23   414.45   451.30     4.25   447.11   442.64     2.40
 MEAN    62.50    47.20    15.30   342.73   386.47     4.25   447.11   442.64     2.40
 HUB     54.63    38.62    16.01   251.32   308.30     4.25   447.11   442.64     2.40

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   372.16   284.67   239.73  1041.57      0.36     7.29     6.52    16.04
 MEAN    18.04   376.93   288.46   242.64  1038.77      0.36     7.43     6.80    12.53
 HUB     15.00   408.51   325.63   246.68  1035.31      0.39     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    414.45   272.60   129.78     0.26  5873.93      0.92     0.87
 MEAN   362.34   253.64    73.88     0.24  5203.65      0.92     0.87     0.87     1.75
 HUB    301.34   247.87    24.29     0.24  4885.22      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.95     1.14     4.53   468.66     1.04   457.52   456.43     1.56
 MEAN     4.87     1.12     4.45   466.49     1.04   455.06   454.95     1.72
 HUB      4.84     1.12     4.35   465.46     1.04   452.04   454.26     1.95

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.90    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    49.93    16.94    12.70     4.24     0.95     0.52     2.22
 HUB     52.85    -5.62    -9.30     3.68     0.95     0.38     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.956       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   388.0444   287.8958   260.1815  1038.4213     0.3737    -0.0370     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.8817     4.4385   454.7581   455.2092     1.7409    47.8948    35.4000   -12.4948

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   258.9599    63.3495   251.0918  1046.0596     0.2476     0.5094     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.8714     4.6706   461.4755   455.1404   554.9116     0.0336     0.6008

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   257.8208     0.0000   257.8208  1046.1051     0.2465     0.4798     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.6512   461.5227   455.1055     0.0000     0.0600     0.0839     0.4651
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8184     4.8493     1.1181   466.8688    17.1955   168.8682     1.3091

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 106909.922       0.622     159.698  280706.594   0.426076E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.712   EfDer =  0.961    SH =  0.427112E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.433    2302.100       4.849     466.869       1.000       1.000       0.980
 W Kg/sec =  12.015  Wdry =  26.432  WH2O = 0.001  lbm/sec   H2O =   0.019g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.020    2426.526       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58016.063   20740.447       2.654     590.487     222.522     468.502       2.105

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    20.55     0.00    -0.02   235.80    -0.08   235.80     0.23     0.45   435.14
 MEAN   18.08     0.00    -0.02   235.80    -0.08   235.80     0.23     0.41
 HUB    15.21     0.00    -0.02   235.80    -0.08   235.80     0.23     0.37

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    60.27    46.36    13.91   412.84   475.51     4.68   462.40   455.10     1.29
 MEAN   57.01    42.30    14.71   363.19   433.09     4.68   462.40   455.10     1.29
 HUB    52.35    37.84    14.51   305.56   386.03     4.68   462.40   455.10     1.29

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    20.42   342.71   235.29   249.17  1058.98     0.32     2.33     2.04     9.02
 MEAN   18.01   342.77   232.91   251.48  1056.77     0.32     2.40     2.13     7.35
 HUB    15.22   363.71   260.27   254.05  1054.59     0.34     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   410.23   304.45   174.94     0.29  4806.39     0.92     0.88
 MEAN  361.81   282.60   128.90     0.27  4196.19     0.92     0.88     0.88     1.69
 HUB   305.82   258.11    45.56     0.24  3963.30     0.92     0.88

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     5.38     1.11     5.01   482.40     1.03   472.95   465.28     0.86
 MEAN    5.31     1.10     4.94   480.43     1.03   470.98   464.05     0.92
 HUB     5.29     1.09     4.87   479.68     1.03   469.04   463.58     0.99

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    43.36    35.07    31.50     3.57     0.93     0.54     1.40
 MEAN   42.80    27.14    23.50     3.64     0.95     0.51     1.63
 HUB    45.69    10.17     6.50     3.67     0.95     0.50     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.961       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   366.9299   233.5650   282.9929  1055.6689     0.3476    -0.1095     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   5.3236     4.9020   470.0068   464.3036     0.9563    39.5342    30.6000    -8.9342

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   274.3592    58.1661   268.1225  1061.0161     0.2586     0.3562     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     5.3185     5.0799   474.7810   464.2649   491.5697     0.0233     0.4536

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   284.2756     0.0000   284.2756  1060.5116     0.2681     0.3471     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0483	474.3355	464.2403	0.0000	0.0600	0.0625	0.2741

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8365	5.3034	1.0937	480.8345	13.9662	191.1660	1.4819

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
86840.273	0.516	129.719	255230.828	0.428771E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.598 EfDer = 0.976 SH = 0.428771E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.433	2302.100	5.303	480.834	1.000	1.000	0.980

W Kg/sec = 12.015 Wdry = 26.432 WH2O = 0.001 lbm/sec H2O = 0.020g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.543	2391.027	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54648.207	20740.447	2.642	545.479	206.490	424.468	2.056

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	240.44	-0.08	240.44	0.23	0.44	418.76
MEAN	17.74	0.00	-0.02	240.44	-0.08	240.44	0.23	0.40	
HUB	15.05	0.00	-0.02	240.44	-0.08	240.44	0.23	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.20	46.36	12.84	403.20	469.52	5.12	476.19	464.23	0.76
MEAN	56.00	43.40	12.60	356.36	429.96	5.12	476.19	464.23	0.76
HUB	51.51	38.84	12.67	302.35	386.36	5.12	476.19	464.23	0.76

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	335.47	219.19	253.96	1073.27	0.31	2.26	1.98	8.75
MEAN	17.51	337.53	219.99	255.99	1071.39	0.32	2.34	2.07	6.78
HUB	14.85	360.51	251.56	258.24	1069.55	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	397.98	310.58	178.79	0.29	4343.80	0.92	0.89		
MEAN	351.70	287.89	131.71	0.27	3852.71	0.92	0.89	0.89	1.64
HUB	298.33	262.44	46.77	0.25	3736.87	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.82	1.10	5.45	494.87	1.03	485.82	472.70	0.54
MEAN	5.76	1.09	5.38	493.28	1.03	484.12	471.78	0.57
HUB	5.75	1.08	5.32	492.91	1.03	482.46	471.57	0.61

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.80	35.15	31.50	3.65	0.93	0.50	1.40
MEAN	40.67	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.25	10.27	6.50	3.77	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	362.9747	221.4319	287.6083	1070.2465	0.3392	-0.1180	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7728	5.3365	483.0924	472.0121	0.5928	37.5930	31.5000	-6.0930

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	283.5450	61.8534	276.7163	1074.8103	0.2638	0.3005	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7697	5.5007	487.2220	471.9850	451.3937	0.0178	0.4253

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	288.2664	0.0000	288.2664	1074.5642	0.2683	0.3290	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4801	487.0049	471.9620	0.0000	0.0600	0.0491	0.2483

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8580	5.7574	1.0856	493.6870	12.8529	197.4480	1.5306

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
79925.164	0.505	119.389	254060.141	0.430361E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.891 EfDer = 0.987 SH = 0.430456E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.433	2302.100	5.757	493.687	1.000	1.000	0.980

W Kg/sec = 12.015 Wdry = 26.432 WH2O = 0.001 lbm/sec H2O = 0.021g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.843	2359.698	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51661.676	20740.443	2.663	513.330	192.734	395.845	2.054

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	241.54	-0.08	241.54	0.22	0.42	396.60
MEAN	16.97	0.00	-0.02	241.54	-0.08	241.54	0.22	0.39	
HUB	14.32	0.00	-0.02	241.54	-0.08	241.54	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.03	46.36	11.67	386.93	456.20	5.56	489.00	471.95	0.48
MEAN	54.69	43.80	10.89	340.93	417.89	5.56	489.00	471.95	0.48
HUB	49.99	37.84	12.15	287.68	375.70	5.56	489.00	471.95	0.48

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	323.49	199.98	254.27	1086.05	0.30	2.16	1.89	8.34
MEAN	16.57	325.58	201.03	256.10	1084.37	0.30	2.24	1.97	6.35
HUB	13.89	347.24	232.30	258.10	1082.71	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	379.29	311.14	179.31	0.29	3777.21	0.92	0.90		
MEAN	332.96	288.08	131.93	0.27	3333.28	0.92	0.90	0.90	1.59
HUB	279.04	262.30	46.75	0.24	3227.82	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.24	1.08	5.87	505.89	1.02	497.48	478.81	0.36
MEAN	6.18	1.07	5.81	504.46	1.02	495.93	478.03	0.38
HUB	6.17	1.07	5.75	504.12	1.02	494.42	477.85	0.40

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.18	35.19	31.50	3.69	0.93	0.47	1.40
MEAN	38.13	27.26	23.50	3.76	0.94	0.46	1.62
HUB	41.99	10.27	6.50	3.77	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.987	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	345.9953	202.1616	280.7907	1083.5509	0.3193	-0.0940	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.1898	5.7728	495.1948	478.2274	0.3927	35.7529	32.4000	-3.3529

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	282.4107	63.3365	275.2168	1087.0592	0.2598	0.2595	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.1884	5.9083	498.4077	478.2108	432.2457	0.0138	0.4010

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	280.1256	0.0000	280.1256	1087.1659	0.2577	0.3119	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.9029	498.5110	478.1894	0.0000	0.0600	0.0404	0.2457

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8716	6.1781	1.0731	504.8205	11.1339	213.7887	1.6573

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
69241.930	0.481	103.431	260328.281	0.431994E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.330 EfDer = 0.994 SH = 0.431994E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.433	2302.100	6.178	504.820	1.000	1.000	0.980

W Kg/sec = 12.015 Wdry = 26.432 WH2O = 0.001 lbm/sec H2O = 0.022g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
62.047	2333.532	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49101.234	20740.443	2.806	509.668	181.627	384.739	2.118

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	231.22	-0.08	231.22	0.21	0.40	373.06
MEAN	15.91	0.00	-0.02	231.22	-0.08	231.22	0.21	0.36	
HUB	13.07	0.00	-0.02	231.22	-0.08	231.22	0.21	0.32	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.87	47.36	10.51	368.04	434.71	5.99	500.52	478.18	0.33
MEAN	54.13	44.80	9.33	319.69	394.60	5.99	500.52	478.18	0.33
HUB	48.64	38.84	9.80	262.57	349.92	5.99	500.52	478.18	0.33

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	307.45	187.20	243.90	1097.54	0.28	2.05	1.78	7.43
MEAN	15.50	306.98	184.05	245.69	1095.80	0.28	2.13	1.86	5.75
HUB	12.59	323.38	208.01	247.60	1094.08	0.30	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	360.41	299.15	173.21	0.27	3359.76	0.92	0.91		
MEAN	311.34	276.70	127.29	0.25	2853.66	0.92	0.91	0.91	1.58
HUB	252.93	251.64	44.91	0.23	2619.94	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.63	1.07	6.28	515.67	1.02	508.07	483.94	0.26
MEAN	6.56	1.06	6.21	514.04	1.02	506.46	483.09	0.27
HUB	6.53	1.06	6.15	513.28	1.02	504.88	482.71	0.29

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.51	35.38	31.50	3.88	0.93	0.46	1.40
MEAN	36.84	27.39	23.50	3.89	0.93	0.44	1.64
HUB	40.03	10.28	6.50	3.78	0.93	0.43	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	336.5544	187.4287	279.5341	1094.4513	0.3075	-0.1754	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.5635	6.1521	505.2256	483.2378	0.2845	33.8420	33.0000	-0.8420

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 STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
15.2185   286.0421    65.3179   278.4845  1097.1863     0.2607     0.1371     2.1315

BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
 0.9500     6.5620     6.2630   507.7541   483.2253   410.5396     0.0243     0.3747

 VANED DIFFUSER EXIT:
R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
14.7013   278.2618     0.0000   278.2618  1097.5623     0.2535     0.2974     0.5109

Blockage4   Ps4       Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
 0.9500     6.2745   508.1070   483.2148     0.0000     0.0600     0.0368     0.1694

 STAGE EXIT CONDITIONS, STAGE            5
 Eff4      Pt4         PR4       Tt2avg      Del T     Ns          Ns nondim
 0.8802     6.5575     1.0614   514.3323     9.5123   234.5258     1.8180

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  59162.121       0.455      88.374  273317.125   0.433460E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1438   Tt4 =   514.3323   T1  =   449.6739

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    402079.41    600.6118     83.4160      1.5119      0.8407     15.2958      1.1438     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 34281 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.360   EfDer =  0.955    SH =  0.372261E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     28.406    2235.470       4.829     451.607       1.000       1.000       0.980
 W Kg/sec =  12.912  Wdry =  28.404  WH2O = 0.001  lbm/sec   H2O =   0.017g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.689    2395.771       1.381       0.248      53.349      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59886.754   22288.033       3.521     831.557     236.188     619.754       2.624

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   172.84    -0.06   172.84     0.17     0.42   431.30
 MEAN    17.06     0.00    -0.02   172.84    -0.06   172.84     0.17     0.36
 HUB     12.51     0.00    -0.02   172.84    -0.06   172.84     0.17     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.76    50.47    16.29   402.45   438.05     4.74   449.20   444.60     2.14
 MEAN    62.56    47.20    15.36   332.81   375.07     4.74   449.20   444.60     2.14
 HUB     54.70    38.62    16.08   244.05   299.10     4.74   449.20   444.60     2.14

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   361.43   276.48   232.79  1043.24      0.35     7.29     6.52    16.04
 MEAN    18.04   365.97   280.19   235.43  1040.62      0.35     7.43     6.80    12.53
 HUB     15.00   396.41   316.19   239.09  1037.38      0.38     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    402.45   264.69   125.97     0.25  5705.07      0.92     0.87
 MEAN   351.85   246.09    71.66     0.24  5054.50      0.92     0.87     0.87     1.75
 HUB    292.62   240.25    23.56     0.23  4743.53      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.46     1.13     5.03   469.51     1.04   459.00   457.72     1.43
 MEAN     5.39     1.12     4.95   467.47     1.04   456.70   456.31     1.57
 HUB      5.35     1.11     4.85   466.49     1.03   453.85   455.64     1.76

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.90    28.42    24.20     4.22     0.93     0.57     1.80
 MEAN    49.96    16.93    12.70     4.23     0.95     0.52     2.22
 HUB     52.90    -5.63    -9.30     3.67     0.95     0.39     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.955       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   376.7104   279.6442   252.4081  1040.2888     0.3621    -0.0370     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3962     4.9344   456.4097   456.5518     1.5918    47.9304    35.4000   -12.5304

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   251.7791    61.5929   244.1292  1047.4579     0.2404     0.5094     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3858     5.1762   462.7244   456.4941   554.9116     0.0327     0.6001

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   250.6326     0.0000   250.6326  1047.5026     0.2393     0.4787     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.1554   462.7707   456.4614     0.0000     0.0600     0.0842     0.4640
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8177     5.3622     1.1105   467.8224    16.2157   168.6198     1.3071

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 100825.836       0.623     161.848  300363.344   0.379890E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.675   EfDer =  0.961    SH =  0.386112E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     28.406    2235.470       5.362     467.822       1.000       1.000       0.980
 W Kg/sec =  12.912  Wdry =  28.404  WH2O = 0.001  lbm/sec   H2O =   0.019g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.953    2353.891       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  56415.434   22288.020       2.728     590.487     216.473     468.502       2.164

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   229.30    -0.08   229.30     0.22     0.44   422.12
 MEAN    18.08     0.00    -0.02   229.30    -0.08   229.30     0.22     0.40
 HUB     15.21     0.00    -0.02   229.30    -0.08   229.30     0.22     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.24    46.36    13.88   400.89   461.90      5.19   463.59   456.46     1.22
 MEAN    56.98    42.30    14.68   352.67   420.73      5.19   463.59   456.46     1.22
 HUB     52.31    37.84    14.47   296.72   375.06      5.19   463.59   456.46     1.22

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   333.09   227.83   242.99  1059.58      0.31     2.33     2.04     9.02
 MEAN    18.01   333.22   225.75   245.10  1057.51      0.32     2.40     2.13     7.35
 HUB     15.22   353.64   252.65   247.44  1055.47      0.34     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    398.36   296.86   170.53     0.28  4653.85      0.92     0.88
 MEAN   351.34   275.40   125.59     0.26  4067.18      0.92     0.88     0.88     1.68
 HUB    296.97   251.38    44.32     0.24  3847.27      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.91     1.10     5.53   482.42     1.03   473.50   466.19     0.84
 MEAN     5.84     1.09     5.46   480.58     1.03   471.65   465.01     0.90
 HUB      5.82     1.08     5.39   479.89     1.03   469.84   464.58     0.96

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.15    35.06    31.50     3.56     0.93     0.53     1.40
 MEAN    42.65    27.13    23.50     3.63     0.95     0.51     1.63
 HUB     45.60    10.16     6.50     3.66     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.961       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   356.7448   226.3838   275.7122  1056.4685     0.3377    -0.1100     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8540     5.4152   470.7329   465.2596     0.9252    39.3890    30.6000    -8.7890

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   267.7285    56.7603   261.6425  1061.4720     0.2522     0.3528     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8491     5.5991   475.2032   465.2266   491.5697     0.0223     0.4502

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   277.3273     0.0000   277.3273  1060.9957     0.2614     0.3440     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5662	474.7824	465.2036	0.0000	0.0600	0.0617	0.2704

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8371	5.8333	1.0879	480.9672	13.1451	191.5541	1.4849

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
81740.898	0.515	131.212	273458.969	0.387862E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.461 EfDer = 0.977 SH = 0.388003E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
28.406	2235.470	5.833	480.967	1.000	1.000	0.980

W Kg/sec = 12.912 Wdry = 28.404 WH2O = 0.001 lbm/sec H2O = 0.020g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.929	2321.503	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53340.543	22288.020	2.703	545.479	201.769	424.468	2.104

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	234.69	-0.08	234.69	0.22	0.43	406.58
MEAN	17.74	0.00	-0.02	234.69	-0.08	234.69	0.22	0.39	
HUB	15.05	0.00	-0.02	234.69	-0.08	234.69	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.07	46.36	12.71	391.53	456.55	5.64	476.54	465.19	0.75
MEAN	55.86	43.40	12.46	346.05	418.19	5.64	476.54	465.19	0.75
HUB	51.37	38.84	12.53	293.60	375.93	5.64	476.54	465.19	0.75

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	326.39	211.57	248.53	1072.96	0.30	2.26	1.98	8.75
MEAN	17.51	328.57	212.76	250.39	1071.22	0.31	2.34	2.07	6.78
HUB	14.85	351.08	244.00	252.44	1069.50	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	386.46	303.90	174.89	0.28	4192.85	0.92	0.89		
MEAN	341.52	281.55	128.76	0.26	3726.11	0.92	0.89	0.89	1.63
HUB	289.70	256.54	45.70	0.24	3624.55	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.37	1.09	5.98	494.12	1.03	485.56	473.31	0.54
MEAN	6.31	1.08	5.91	492.66	1.02	483.98	472.44	0.57
HUB	6.29	1.08	5.85	492.34	1.02	482.43	472.25	0.60

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.41	35.13	31.50	3.63	0.93	0.50	1.40
MEAN	40.36	27.21	23.50	3.71	0.94	0.48	1.62
HUB	44.03	10.26	6.50	3.76	0.94	0.48	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.977	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	353.4830	214.1551	281.2256	1070.1204	0.3303	-0.1192	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3177	5.8637	482.9920	472.6660	0.5923	37.2895	31.5000	-5.7895

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	277.6470	60.5668	270.9604	1074.3748	0.2584	0.2937	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3149	6.0320	486.8407	472.6429	451.3937	0.0169	0.4195

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	282.2175	0.0000	282.2175	1074.1414	0.2627	0.3237	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.0106	486.6349	472.6219	0.0000	0.0600	0.0479	0.2417

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8593	6.3022	1.0804	493.0392	12.0724	198.5290	1.5390

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
75076.195	0.503	120.514	272626.875	0.389664E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.658 EfDer = 0.988 SH = 0.389797E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
28.406	2235.470	6.302	493.039	1.000	1.000	0.980

W Kg/sec = 12.912 Wdry = 28.404 WH2O = 0.001 lbm/sec H2O = 0.021g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
64.597	2292.906	1.381	0.248	53.350	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
50600.785	22288.018	2.715	513.330	189.090	395.845	2.093

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	236.58	-0.08	236.58	0.22	0.41	385.37
MEAN	16.97	0.00	-0.02	236.58	-0.08	236.58	0.22	0.38	
HUB	14.32	0.00	-0.02	236.58	-0.08	236.58	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.81	46.36	11.45	375.73	444.07	6.10	488.54	472.61	0.49
MEAN	54.46	43.80	10.66	331.07	406.97	6.10	488.54	472.61	0.49
HUB	49.75	37.84	11.91	279.36	366.13	6.10	488.54	472.61	0.49

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	315.12	192.32	249.63	1084.92	0.29	2.16	1.89	8.34
MEAN	16.57	317.41	193.91	251.29	1083.36	0.29	2.24	1.97	6.35
HUB	13.89	338.77	225.15	253.12	1081.83	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	368.31	305.43	176.00	0.28	3632.52	0.92	0.90		
MEAN	323.33	282.66	129.42	0.26	3215.21	0.92	0.90	0.90	1.58
HUB	270.97	257.23	45.81	0.24	3128.57	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.79	1.08	6.41	504.43	1.02	496.45	479.19	0.38
MEAN	6.73	1.07	6.35	503.13	1.02	495.02	478.46	0.39
HUB	6.72	1.07	6.29	502.85	1.02	493.63	478.31	0.41

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.61	35.19	31.50	3.69	0.93	0.47	1.40
MEAN	37.66	27.25	23.50	3.75	0.94	0.45	1.62
HUB	41.65	10.26	6.50	3.76	0.94	0.45	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.988	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	337.5083	194.9996	275.4760	1082.5712	0.3118	-0.0954	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7461	6.3120	494.3124	478.6512	0.4029	35.2933	32.4000	-2.8933

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	277.3947	62.2115	270.3286	1085.8197	0.2555	0.2496	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.7448     6.4493   497.2845   478.6371   432.2457     0.0132     0.3931

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   275.1274     0.0000   275.1274  1085.9242     0.2534     0.3041     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.4440   497.3852   478.6175     0.0000     0.0600     0.0395     0.2363

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8731     6.7343     1.0686   503.4712    10.4325   215.7253     1.6723

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  64883.266       0.478     104.152  279750.031   0.391429E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.010   EfDer =  0.996    SH =  0.391556E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     28.406    2235.470       6.734     503.471       1.000       1.000       0.980
 W Kg/sec =  12.912  Wdry =  28.404  WH2O = 0.001  lbm/sec   H2O =   0.022g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     61.088    2269.027       1.381       0.248      53.350      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  48242.770   22288.016       2.850     509.668     178.821     384.739       2.152

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   227.17    -0.08   227.17     0.21     0.39   362.74
 MEAN    15.91     0.00    -0.02   227.17    -0.08   227.17     0.21     0.35
 HUB     13.07     0.00    -0.02   227.17    -0.08   227.17     0.21     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.56    47.36    10.20   357.39   423.55     6.54   499.32   478.61     0.34
 MEAN    53.81    44.80     9.01   310.43   384.74     6.54   499.32   478.61     0.34
 HUB     48.31    38.84     9.47   254.97   341.55     6.54   499.32   478.61     0.34

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   299.78   179.45   240.14  1095.66      0.27     2.05     1.78     7.43
 MEAN    15.50   299.69   177.09   241.77  1094.05      0.27     2.13     1.86     5.75
 HUB     12.59   316.01   201.40   243.52  1092.47      0.29     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    349.98   294.52   170.53     0.27  3220.78      0.92     0.91
 MEAN   302.33   272.28   125.24     0.25  2745.68      0.92     0.91     0.91     1.56
 HUB    245.61   247.50    44.21     0.23  2536.68      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.19     1.07     6.83   513.57     1.02   506.35   484.13     0.27
 MEAN     7.12     1.06     6.77   512.08     1.02   504.86   483.34     0.29
 HUB      7.09     1.05     6.70   511.43     1.02   503.40   482.99     0.30

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     36.77    35.38    31.50     3.88     0.93     0.45     1.40
 MEAN    36.22    27.39    23.50     3.89     0.93     0.43     1.64
 HUB     39.59    10.29     6.50     3.79     0.93     0.42     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.996       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   328.8631   180.3348   275.0096  1092.7493     0.3010    -0.1778     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.1278     6.6992   503.6671   483.4799     0.2982    33.2545    33.0000    -0.2545
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   281.6995    64.3263   274.2567  1095.2574     0.2572     0.1232     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.1265     6.8101   505.9822   483.4693   410.5396     0.0236     0.3650

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   274.0497     0.0000   274.0497  1095.6226     0.2501     0.2870     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.8222   506.3240   483.4593     0.0000     0.0600     0.0366     0.1558

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8808     7.1216     1.0575   512.3619     8.8911   237.4559     1.8407

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  55301.922       0.452      88.772  294084.813   0.393228E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1345   Tt4 =   512.3619   T1  =   451.6072

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    377828.13    606.4975     80.6887      1.4749      0.8416     15.3596      1.1345     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 30029 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =13.845   EfDer =  0.968    SH =  0.719598E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     32.560    2121.564       5.592     461.415       1.000       1.000       0.980
 W Kg/sec =  14.800  Wdry =  32.558  WH2O = 0.002  lbm/sec   H2O =   0.037g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.722    2249.405       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60560.836   25547.541       3.519     831.557     236.295     619.754       2.623

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   174.79    -0.06   174.79     0.17     0.40   404.95
 MEAN    17.06     0.00    -0.02   174.79    -0.06   174.79     0.17     0.35
 HUB     12.51     0.00    -0.02   174.79    -0.06   174.79     0.17     0.28

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.41    50.47    14.94   381.95   420.10      5.49   458.96   452.59     2.99
 MEAN    61.05    47.20    13.85   315.85   361.04      5.49   458.96   452.59     2.99
 HUB     52.97    38.62    14.35   231.61   290.21      5.49   458.96   452.59     2.99

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   347.42   254.34   236.67  1052.64      0.33     7.29     6.52    16.04
 MEAN    18.04   354.29   261.54   238.98  1050.43      0.34     7.43     6.80    12.53
 HUB     15.00   387.09   301.89   242.29  1047.58      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    381.95   268.88   127.61     0.26  5248.25      0.92     0.89
 MEAN   333.92   249.70    72.38     0.24  4718.23      0.92     0.89     0.89     1.65
 HUB    277.71   243.50    24.17     0.23  4529.03      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.22     1.11     5.78   477.04     1.03   467.34   463.63     2.16
 MEAN     6.16     1.10     5.70   475.46     1.03   465.37   462.58     2.33
 HUB      6.13     1.10     5.59   474.90     1.03   462.85   462.22     2.56

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     47.06    28.33    24.20     4.13     0.93     0.53     1.80
 MEAN    47.58    16.85    12.70     4.15     0.94     0.48     2.22
 HUB     51.25    -5.70    -9.30     3.60     0.94     0.35     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.968       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   365.7881   261.0355   256.2447  1050.0530     0.3484    -0.0424     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.1673     5.6769   465.0425   462.8053     2.3573    45.5306    35.4000   -10.1306

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   256.8267    62.8277   249.0234  1056.1907     0.2432     0.4679     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.1596     5.9145   470.4975   462.7312   554.9116     0.0258     0.5569

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   255.3920     0.0000   255.3920  1056.2491     0.2418     0.4489     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.8970   470.5565   462.7028     0.0000     0.0600     0.0692     0.4318
```

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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8359     6.1386     1.0977   475.8008    14.3862   176.0145     1.3645

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  89469.641       0.613     164.624  338701.469   0.731716E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =12.791   EfDer =  0.975    SH =  0.741311E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     32.560    2121.564       6.139     475.801       1.000       1.000       0.980
 W Kg/sec =  14.800  Wdry =  32.558  WH2O = 0.002  lbm/sec   H2O =   0.040g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     74.677    2215.143       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57480.813   25547.520       2.701     590.487     218.599     468.502       2.143

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   233.63    -0.08   233.63     0.22     0.42   397.24
 MEAN    18.08     0.00    -0.02   233.63    -0.08   233.63     0.22     0.39
 HUB     15.21     0.00    -0.02   233.63    -0.08   233.63     0.22     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.45    46.36    12.09   380.47   446.54     5.94   471.41   462.70     1.88
 MEAN    55.09    42.30    12.79   334.70   408.24     5.94   471.41   462.70     1.88
 HUB     50.33    37.84    12.49   281.60   365.96     5.94   471.41   462.70     1.88

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950       77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   321.63   203.64   248.95  1066.65      0.30     2.33     2.04     9.02
 MEAN    18.01   324.00   205.20   250.73  1064.98      0.30     2.40     2.13     7.35
 HUB     15.22   346.29   236.75   252.71  1063.34      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    378.06   303.96   174.41     0.28  4160.08      0.92     0.89
 MEAN   333.44   281.62   128.23     0.26  3697.17      0.92     0.89     0.89     1.59
 HUB    281.84   256.70    45.09     0.24  3605.31      0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.67     1.09     6.27   488.19     1.03   479.87   470.75     1.38
 MEAN     6.61     1.08     6.20   486.81     1.02   478.37   469.89     1.46
 HUB      6.60     1.07     6.14   486.53     1.02   476.89   469.73     1.54

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.28    35.02    31.50     3.52     0.93     0.48     1.40
 MEAN    39.30    27.09    23.50     3.59     0.94     0.46     1.63
 HUB     43.13    10.12     6.50     3.62     0.94     0.46     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.975       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   349.1909   205.7798   282.1152  1063.8635     0.3282    -0.1236     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6223     6.1521   477.3724   470.1259     1.5081    36.1077    30.6000    -5.5077

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   275.0406    58.3106   268.7884  1068.0017     0.2575     0.2878     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6195     6.3250   481.0939   470.0847   491.5697     0.0165     0.3960

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   284.7016     0.0000   284.7016  1067.5132     0.2667     0.2977     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.2921	480.6592	470.0696	0.0000	0.0600	0.0468	0.2100

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8570	6.6067	1.0762	487.1758	11.3752	204.4899	1.5852

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
70750.891	0.495	130.182	309621.563	0.744115E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =10.354 EfDer = 0.990 SH = 0.745219E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
32.560	2121.564	6.607	487.176	1.000	1.000	0.980

W Kg/sec = 14.800 Wdry = 32.558 WH2O = 0.002 lbm/sec H2O = 0.043g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.211	2189.129	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54736.031	25547.516	2.654	545.479	205.528	424.468	2.065

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	240.83	-0.08	240.83	0.23	0.41	383.40
MEAN	17.74	0.00	-0.02	240.83	-0.08	240.83	0.23	0.38	
HUB	15.05	0.00	-0.02	240.83	-0.08	240.83	0.23	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.06	46.36	10.70	371.58	442.87	6.38	482.51	470.05	1.26
MEAN	53.75	43.40	10.35	328.41	407.32	6.38	482.51	470.05	1.26
HUB	49.17	38.84	10.33	278.64	368.35	6.38	482.51	470.05	1.26

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	317.05	186.39	256.47	1077.93	0.29	2.26	1.98	8.75
MEAN	17.51	321.29	191.48	257.99	1076.58	0.30	2.34	2.07	6.78
HUB	14.85	345.51	227.91	259.68	1075.25	0.32	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	366.77	313.55	180.37	0.29	3694.09	0.92	0.91		
MEAN	324.12	290.09	132.64	0.27	3353.68	0.92	0.91	0.91	1.53
HUB	274.93	263.91	47.03	0.25	3385.67	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.11	1.08	6.70	498.17	1.02	490.09	476.76	0.97
MEAN	7.06	1.07	6.64	497.16	1.02	488.86	476.16	1.01
HUB	7.07	1.07	6.58	497.25	1.02	487.66	476.23	1.05

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.01	35.12	31.50	3.62	0.93	0.44	1.40
MEAN	36.58	27.21	23.50	3.71	0.94	0.43	1.62
HUB	41.27	10.26	6.50	3.76	0.94	0.44	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.990	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	348.1035	192.7398	289.8748	1075.3899	0.3237	-0.1339	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.0748	6.5856	487.7871	476.3862	1.0463	33.6202	31.5000	-2.1202

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	287.3085	62.6744	280.3892	1078.8077	0.2663	0.2167	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.0734	6.7375	490.8926	476.3571	451.3937	0.0132	0.3606

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	291.9104	0.0000	291.9104	1078.5668	0.2706	0.2675	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7165	490.6783	476.3416	0.0000	0.0600	0.0381	0.1686

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8745	7.0625	1.0690	497.5286	10.3532	214.1345	1.6600

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
64398.988	0.479	118.494	309798.125	0.747683E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.314 EfDer = 0.998 SH = 0.749388E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
32.560	2121.564	7.062	497.529	1.000	1.000	0.980

W Kg/sec = 14.800 Wdry = 32.558 WH2O = 0.002 lbm/sec H2O = 0.045g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
66.374	2166.233	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52304.254	25547.510	2.642	513.330	194.298	395.845	2.037

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	244.54	-0.08	244.54	0.23	0.40	364.08
MEAN	16.97	0.00	-0.02	244.54	-0.08	244.54	0.23	0.37	
HUB	14.32	0.00	-0.02	244.54	-0.08	244.54	0.23	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.56	46.36	9.20	356.58	432.45	6.82	492.72	476.33	0.89
MEAN	52.11	43.80	8.31	314.20	398.21	6.82	492.72	476.33	0.89
HUB	47.32	37.84	9.48	265.12	360.74	6.82	492.72	476.33	0.89

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	308.31	166.51	259.48	1087.94	0.28	2.16	1.89	8.34
MEAN	16.57	312.64	172.42	260.80	1086.78	0.29	2.24	1.97	6.35
HUB	13.89	335.70	209.55	262.27	1085.64	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	349.55	317.54	183.04	0.29	3145.27	0.92	0.91		
MEAN	306.85	293.41	134.43	0.27	2859.07	0.92	0.91	0.91	1.48
HUB	257.16	266.55	47.61	0.25	2911.91	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.51	1.06	7.11	506.89	1.02	499.25	481.73	0.72
MEAN	7.47	1.06	7.06	506.04	1.02	498.18	481.25	0.74
HUB	7.48	1.06	7.00	506.20	1.02	497.14	481.35	0.77

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.69	35.20	31.50	3.70	0.93	0.40	1.40
MEAN	33.47	27.27	23.50	3.77	0.93	0.40	1.62
HUB	38.63	10.29	6.50	3.79	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.998	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	334.4626	173.3881	286.0102	1085.9001	0.3080	-0.1080	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.4825	7.0121	497.3829	481.4436	0.7617	31.2255	32.4000	1.1745

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	289.0661	64.8291	281.7027	1088.3807	0.2656	0.1645	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4816     7.1282   499.6583   481.4249   432.2457     0.0122     0.3299

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   286.6480     0.0000   286.6480  1088.4983     0.2633     0.2374     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.1238   499.7702   481.4065     0.0000     0.0600     0.0371     0.1543

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8793     7.4709     1.0578   506.3752     8.8469   235.5072     1.8256

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  55034.055       0.450     101.263  318949.719   0.751757E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.454   EfDer =  1.000    SH =  0.754262E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     32.560    2121.564       7.471     506.375       1.000       1.000       0.980
 W Kg/sec =  14.800  Wdry =  32.558  WH2O = 0.002  lbm/sec   H2O =   0.047g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     63.301    2147.228       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50219.770   25547.506       2.750     509.668     185.304     384.739       2.076

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   236.48    -0.08   236.48     0.22     0.38   343.27
 MEAN   15.91     0.00    -0.02   236.48    -0.08   236.48     0.22     0.35
 HUB    13.07     0.00    -0.02   236.48    -0.08   236.48     0.22     0.31

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    55.12    47.36     7.76   339.18   413.55     7.23   501.88   481.39     0.66
 MEAN   51.25    44.80     6.45   294.62   377.85     7.23   501.88   481.39     0.66
 HUB    45.67    38.84     6.83   241.98   338.40     7.23   501.88   481.39     0.66

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   294.46   153.40   251.35  1096.99     0.27     2.05     1.78     7.43
 MEAN   15.50   296.83   155.79   252.66  1095.78     0.27     2.13     1.86     5.75
 HUB    12.59   315.33   186.77   254.07  1094.59     0.29     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   332.14   308.43   178.75     0.28  2753.44     0.92     0.91
 MEAN  286.92   284.66   131.14     0.26  2415.65     0.92     0.91     0.91     1.46
 HUB   233.09   258.26    46.33     0.24  2352.47     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     7.88     1.05     7.50   514.57     1.02   507.60   485.91     0.55
 MEAN    7.83     1.05     7.44   513.57     1.01   506.48   485.37     0.57
 HUB     7.82     1.05     7.39   513.38     1.01   505.38   485.28     0.59

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    31.40    35.42    31.50     3.92     0.93     0.39     1.40
 MEAN   31.66    27.43    23.50     3.93     0.93     0.37     1.64
 HUB    36.32    10.33     6.50     3.83     0.93     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   328.4190   158.6454   287.5598  1094.3496     0.3001    -0.1968     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.8344    7.3659   505.1677   485.5151     0.5961    28.8853    33.0000     4.1147
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   295.6425    67.5102   287.8313  1096.1296     0.2697     0.0170     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.8315     7.4504   506.8118   485.4989   410.5396     0.0272     0.2991

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   287.5884     0.0000   287.5884  1096.5344     0.2623     0.2110     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.4648   507.1893   485.4863     0.0000     0.0600     0.0424     0.0531

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8739     7.8255     1.0475   513.8373     7.4625   262.1688     2.0323

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  46425.250       0.421      85.422  336222.219   0.756490E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1136   Tt4 =   513.8373   T1  =   461.4150

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    326078.81    599.9853     80.7223      1.3993      0.8552     13.8453     1.1136     37.3740
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*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 25666 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.022   EfDer =  0.995    SH =  0.132743E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     41.065    1951.042       6.513     472.324       1.000       1.000       0.980
  W Kg/sec =  18.666  Wdry =  41.060  WH2O = 0.005  lbm/sec   H2O =   0.078g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     88.445    2044.580       1.381       0.248      53.353      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  67333.266   32220.186       3.212     831.557     258.916     619.754       2.394

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   194.33    -0.07   194.33     0.18     0.38   368.08
 MEAN    17.06     0.00    -0.02   194.33    -0.07   194.33     0.18     0.33
 HUB     12.51     0.00    -0.02   194.33    -0.07   194.33     0.18     0.27

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     61.05    50.47    10.58   351.25   401.48     6.36   469.29   461.19     3.98
 MEAN    56.22    47.20     9.02   290.47   349.54     6.36   469.29   461.19     3.98
 HUB     47.63    38.62     9.01   213.00   288.38     6.36   469.29   461.19     3.98

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   337.78   208.34   265.88  1061.11      0.32     7.29     6.52    16.04
 MEAN    18.04   350.55   226.33   267.69  1059.66      0.33     7.43     6.80    12.53
 HUB     15.00   391.41   282.65   270.77  1057.42      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    351.25   301.85   142.91     0.28  4299.39      0.92     0.91
 MEAN   307.08   279.61    80.75     0.26  4083.27      0.92     0.91     0.91     1.41
 HUB    255.39   272.13    27.25     0.26  4240.51      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.06     1.08     6.59   484.09     1.02   474.92   469.22     3.23
 MEAN     7.04     1.08     6.53   483.50     1.02   473.62   468.86     3.39
 HUB      7.06     1.08     6.43   483.93     1.02   471.62   469.19     3.65

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.08    28.26    24.20     4.06     0.93     0.39     1.80
 MEAN    40.21    16.79    12.70     4.09     0.93     0.35     2.22
 HUB     46.23    -5.75    -9.30     3.55     0.93     0.23     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.995       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   365.4696   225.8922   287.2990  1059.0804     0.3451    -0.0601     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     7.0472     6.4969   473.1049   469.0880     3.4542    38.1766    35.4000    -2.7766

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   290.1995    70.9917   281.3822  1063.5090     0.2729     0.3319     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     7.0448     6.6941   477.0721   469.0061   554.9116     0.0145     0.4327

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   288.0760     0.0000   288.0760  1063.6125     0.2708     0.3447     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     6.6865   477.1708   468.9880     0.0000     0.0600     0.0392     0.3177
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8763     7.0315     1.0796   483.8413    11.5174   201.6137     1.5629

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  71650.531       0.581     166.275  420897.000   0.134275E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.176   EfDer =  1.000    SH =  0.135510E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     41.065    1951.042       7.032     483.841       1.000       1.000       0.980
 W Kg/sec =  18.666  Wdry =  41.060  WH2O = 0.006  lbm/sec   H2O =   0.083g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.916    2020.102       1.381       0.249      53.353      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64753.262   32220.148       2.433     590.487     242.729     468.502       1.930

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   263.19    -0.09   263.19     0.25     0.41   362.26
 MEAN    18.08     0.00    -0.02   263.19    -0.09   263.19     0.25     0.38
 HUB     15.21     0.00    -0.02   263.19    -0.09   263.19     0.25     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.06     46.36     6.70   349.89   437.89     6.74   478.27   468.97     2.90
 MEAN    49.48     42.30     7.18   307.80   405.05     6.74   478.27   468.97     2.90
 HUB     44.55     37.84     6.71   258.97   369.29     6.74   478.27   468.97     2.90

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   320.25   148.79   283.59  1071.10      0.30     2.33     2.04     9.02
 MEAN    18.01   326.93   160.78   284.66  1070.29      0.31     2.40     2.13     7.35
 HUB     15.22   353.49   207.88   285.90  1069.49      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    347.67   346.38   198.88     0.32  3040.16      0.92     0.91
 MEAN   306.64   319.85   145.86     0.30  2897.32      0.92     0.91     0.91     1.37
 HUB    259.19   290.47    51.31     0.27  3165.95      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.44     1.06     7.00   492.16     1.02   483.92   474.29     2.37
 MEAN     7.42     1.06     6.96   491.77     1.02   483.18   474.06     2.43
 HUB      7.46     1.06     6.92   492.51     1.02   482.46   474.54     2.49

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     27.68    35.04    31.50     3.54     0.93     0.33     1.40
 MEAN    29.46    27.13    23.50     3.63     0.93     0.33     1.63
 HUB     36.02    10.17     6.50     3.67     0.93     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   359.1950   161.2337   320.9746  1068.7252     0.3361    -0.1650     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.4351     6.8829   481.7765   474.3153     2.5538    26.6715    30.6000     3.9285

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   315.2289    66.8308   308.0632  1071.3666     0.2942     0.0919     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4327     7.0048   484.1597   474.2689   491.5697     0.0151     0.2521

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   326.4850     0.0000   326.4850  1070.7200     0.3049     0.1439     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9624	483.5793	474.2612	0.0000	0.0600	0.0419	0.0033

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8706	7.4199	1.0552	492.1465	8.3054	252.6398	1.9584

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
51673.180	0.427	119.915	387944.250	0.135877E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.263 EfDer = 0.994 SH = 0.136154E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
41.065	1951.042	7.420	492.146	1.000	1.000	0.980

W Kg/sec = 18.666 Wdry = 41.060 WH2O = 0.006 lbm/sec H2O = 0.086g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
79.248	2002.984	1.381	0.249	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62561.656	32220.143	2.351	545.479	231.993	424.468	1.830

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	275.26	-0.09	275.26	0.26	0.41	350.80
MEAN	17.74	0.00	-0.02	275.26	-0.09	275.26	0.26	0.38	
HUB	15.05	0.00	-0.02	275.26	-0.09	275.26	0.26	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.16	46.36	4.80	341.71	438.86	7.09	486.06	474.22	2.21
MEAN	47.66	43.40	4.26	302.02	408.70	7.09	486.06	474.22	2.21
HUB	42.96	38.84	4.12	256.24	376.13	7.09	486.06	474.22	2.21

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	323.27	127.64	297.00	1078.54	0.30	2.26	1.98	8.75
MEAN	17.51	330.76	144.28	297.64	1078.10	0.31	2.34	2.07	6.78
HUB	14.85	358.20	198.04	298.47	1077.68	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	337.29	363.54	209.65	0.34	2530.46	0.92	0.91		
MEAN	298.07	335.02	153.79	0.31	2527.54	0.92	0.91	0.91	1.31
HUB	252.84	303.46	54.79	0.28	2942.39	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.77	1.05	7.31	499.07	1.01	490.67	478.45	1.88
MEAN	7.77	1.05	7.28	499.06	1.01	490.27	478.45	1.91
HUB	7.83	1.05	7.26	500.20	1.02	489.89	479.15	1.93

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	23.26	35.22	31.50	3.72	0.93	0.27	1.40
MEAN	25.86	27.33	23.50	3.83	0.92	0.29	1.62
HUB	33.57	10.40	6.50	3.90	0.92	0.33	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	365.3914	145.2273	335.2909	1076.3815	0.3395	-0.1777	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.7839	7.1947	488.7147	478.7023	2.0097	23.4193	31.5000	8.0807

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	334.9910	73.0760	326.9233	1078.2664	0.3107	-0.0039	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.7783	7.2812	490.4258	478.6656	451.3937	0.0211	0.2102

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	340.8406	0.0000	340.8406	1077.9141	0.3162	0.0882	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.2467	490.1082	478.6437	0.0000	0.0600	0.0580	-0.0721

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8383	7.7597	1.0458	499.4449	7.2986	273.5878	2.1208

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
45411.871	0.399	105.384	390658.406	0.136499E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 1.672 EfDer = 0.973 SH = 0.136753E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
41.065	1951.042	7.760	499.445	1.000	1.000	0.980

W Kg/sec = 18.666 Wdry = 41.060 WH2O = 0.006 lbm/sec H2O = 0.089g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
76.337	1988.296	1.381	0.249	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
60811.727	32220.135	2.297	513.330	223.475	395.845	1.771

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	284.32	-0.10	284.32	0.26	0.40	334.17
MEAN	16.97	0.00	-0.02	284.32	-0.10	284.32	0.26	0.38	
HUB	14.32	0.00	-0.02	284.32	-0.10	284.32	0.26	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.08	46.36	2.72	327.92	434.09	7.40	492.95	478.60	1.75
MEAN	45.47	43.80	1.67	288.94	405.44	7.40	492.95	478.60	1.75
HUB	40.63	37.84	2.79	243.81	374.60	7.40	492.95	478.60	1.75

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	323.36	104.31	306.08	1084.85	0.30	2.16	1.89	8.34
MEAN	16.57	330.18	123.05	306.39	1084.66	0.30	2.24	1.97	6.35
HUB	13.89	355.69	179.72	306.94	1084.49	0.33	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	321.45	375.28	217.14	0.35	1971.24	0.92	0.89		
MEAN	282.19	345.26	159.14	0.32	2041.02	0.92	0.89	0.89	1.26
HUB	236.49	312.15	56.77	0.29	2497.69	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.03	1.04	7.56	504.84	1.01	496.44	481.76	1.55
MEAN	8.04	1.04	7.55	505.03	1.01	496.27	481.88	1.56
HUB	8.11	1.04	7.53	506.28	1.01	496.11	482.61	1.57

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	18.82	35.35	31.50	3.85	0.93	0.22	1.40
MEAN	21.88	27.45	23.50	3.95	0.91	0.24	1.62
HUB	30.35	10.48	6.50	3.98	0.91	0.29	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.973	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	358.8409	123.7383	336.8317	1083.3091	0.3312	-0.1451	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0563	7.4743	495.0349	482.0961	1.6246	20.1713	32.4000	12.2287

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	343.3124	76.9949	334.5672	1084.2694	0.3166	-0.0659	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.0464	7.5131	495.9111	482.0678	432.2457	0.0292	0.1738

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	341.0918	0.0000	341.0918	1084.4015	0.3145	0.0345	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.4944	496.0332	482.0249	0.0000	0.0600	0.0822	-0.1024

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7668	8.0192	1.0334	505.3833	5.9386	314.8394	2.4406

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
36951.527	0.358	85.751	404699.688	0.137055E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-0.731 EfDer = 0.938 SH = 0.137374E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
41.065	1951.042	8.019	505.383	1.000	1.000	0.980

W Kg/sec = 18.666 Wdry = 41.060 WH2O = 0.006 lbm/sec H2O = 0.091g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
74.305	1976.580	1.381	0.249	53.353	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
59457.977	32220.125	2.343	509.668	217.526	384.739	1.769

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	279.98	-0.10	279.98	0.26	0.39	315.99
MEAN	15.91	0.00	-0.02	279.98	-0.10	279.98	0.26	0.36	
HUB	13.07	0.00	-0.02	279.98	-0.10	279.98	0.26	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	48.10	47.36	0.74	311.92	419.22	7.66	499.08	481.98	1.42
MEAN	44.07	44.80	-0.73	270.94	389.68	7.66	499.08	481.98	1.42
HUB	38.49	38.84	-0.35	222.53	357.71	7.66	499.08	481.98	1.42

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	314.94	89.02	302.10	1090.67	0.29	2.05	1.78	7.43
MEAN	15.50	320.24	105.38	302.40	1090.48	0.29	2.13	1.86	5.75
HUB	12.59	341.61	157.82	302.96	1090.30	0.31	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	305.45	371.62	216.43	0.34	1598.82	0.92	0.86		
MEAN	263.86	341.41	158.48	0.31	1634.69	0.92	0.86	0.86	1.23
HUB	214.36	308.19	56.53	0.28	1988.26	0.92	0.86		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.24	1.03	7.78	509.76	1.01	501.79	484.46	1.30
MEAN	8.24	1.03	7.77	509.86	1.01	501.62	484.52	1.31
HUB	8.29	1.03	7.75	510.82	1.01	501.45	485.06	1.32

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	16.42	35.62	31.50	4.12	0.93	0.19	1.40
MEAN	19.21	27.66	23.50	4.16	0.90	0.21	1.64
HUB	27.52	10.57	6.50	4.07	0.90	0.25	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.938	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	361.8011	107.3132	345.5198	1088.3134	0.3324	-0.2499	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.2470	7.6471	499.6270	484.6923	1.3940	17.2540	33.0000	15.7460

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   359.0137    81.9811   349.5282  1088.4928     0.3298    -0.2784     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.2200     7.6310   499.7882   484.6480   410.5396     0.0752     0.1420

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   349.2614     0.0000   349.2614  1089.0973     0.3207     0.0013     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.6479   500.3432   484.6172     0.0000     0.0600     0.1056    -0.2438

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6732     8.2051     1.0232   510.1464     4.7632   367.3015     2.8473

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  29639.402       0.318      68.782  428749.125   0.137716E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0801   Tt4 =   510.1464   T1  =   472.3241

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    235326.52    546.1075     88.4451      1.2598      0.8217     9.0220      1.0801     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 20047 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.394   EfDer =  0.998    SH =  0.270771E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     50.870    1792.283       7.939     487.555       1.000       1.000       0.980
  W Kg/sec =  23.123  Wdry =  50.856  WH2O = 0.014  lbm/sec   H2O =   0.188g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     91.316    1848.641       1.381       0.249      53.357      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  70719.797   39910.719       3.110     831.557     267.353     619.754       2.318

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   204.11    -0.07   204.11     0.19     0.36   332.80
 MEAN    17.06     0.00    -0.02   204.11    -0.07   204.11     0.19     0.31
 HUB     12.51     0.00    -0.02   204.11    -0.07   204.11     0.19     0.26

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.69    50.47     7.22   322.67   381.86     7.74   484.21   472.71     5.17
 MEAN    52.59    47.20     5.39   266.83   336.00     7.74   484.21   472.71     5.17
 HUB     43.80    38.62     5.18   195.66   282.79     7.74   484.21   472.71     5.17

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.79   170.73   282.15  1075.20      0.31     7.29     6.52    16.04
 MEAN    18.04   344.69   196.32   283.32  1074.36      0.32     7.43     6.80    12.53
 HUB     15.00   388.53   263.09   285.90  1072.63      0.36     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    322.67   320.46   151.93     0.30  3523.66      0.92     0.91
 MEAN   282.09   296.02    85.77     0.28  3542.07      0.92     0.91     0.91     1.27
 HUB    234.61   287.32    28.48     0.27  3947.20      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.43     1.06     7.90   496.41     1.02   487.67   478.45     4.60
 MEAN     8.43     1.06     7.86   496.46     1.02   486.91   478.50     4.72
 HUB      8.49     1.07     7.76   497.47     1.02   485.35   479.21     4.97

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.18    28.30    24.20     4.10     0.93     0.29     1.80
 MEAN    34.72    16.84    12.70     4.14     0.92     0.25     2.22
 HUB     42.62    -5.69    -9.30     3.61     0.92     0.15     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.998       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   361.8842   195.9408   304.2490  1073.6385     0.3371    -0.0744     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     8.4420     7.8116   486.2599   478.7265     4.8213    32.7821    35.4000     2.6179

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   309.3582    75.6785   299.9588  1076.7592     0.2873     0.2231     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     8.4395     7.9755   489.0923   478.6266   554.9116     0.0141     0.3451

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   307.0449     0.0000   307.0449  1076.8800     0.2851     0.2480     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     7.9680   489.2069   478.6050     0.0000     0.0600     0.0390     0.2107
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8717     8.4244     1.0611   496.7801     9.2248   224.0840     1.7371

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57423.879       0.552     165.076  509667.219   0.273017E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 2.958   EfDer =  0.985    SH =  0.275024E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
    50.870    1792.283       8.424     496.780       1.000       1.000       0.980
W Kg/sec =  23.123  Wdry =  50.856  WH2O = 0.014  lbm/sec   H2O =   0.195g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
    86.869    1831.397       1.381       0.249      53.357      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68968.656   39910.648       2.322     590.487     254.331     468.502       1.842

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
TIP     20.55     0.00    -0.02   280.32    -0.10   280.32     0.26     0.40   328.42
MEAN    18.08     0.00    -0.02   280.32    -0.10   280.32     0.26     0.37
HUB     15.21     0.00    -0.02   280.32    -0.10   280.32     0.26     0.34

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
TIP     48.92     46.36     2.56   321.41   426.55     8.04   490.47   478.57     4.22
MEAN    45.26     42.30     2.96   282.76   398.23     8.04   490.47   478.57     4.22
HUB     40.33     37.84     2.49   237.89   367.72     8.04   490.47   478.57     4.22

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
TIP     20.42   322.95   104.32   305.64  1081.88     0.30     2.33     2.04     9.02
MEAN    18.01   330.15   124.28   305.87  1081.76     0.31     2.40     2.13     7.35
HUB     15.22   356.57   182.50   306.33  1081.65     0.33     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
TIP    319.38   373.72   215.06     0.35  2132.22     0.92     0.90
MEAN   281.69   344.00   157.41     0.32  2239.97     0.92     0.90     0.90     1.24
HUB    238.10   311.33    55.60     0.29  2779.65     0.92     0.90

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
TIP      8.73     1.04     8.21   502.14     1.01   493.76   481.85     3.77
MEAN     8.74     1.04     8.20   502.41     1.01   493.65   482.02     3.79
HUB      8.82     1.05     8.19   503.76     1.01   493.55   482.86     3.80

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
TIP     18.85    35.13    31.50     3.63     0.93     0.21     1.40
MEAN    22.11    27.23    23.50     3.73     0.91     0.23     1.63
HUB     30.79    10.29     6.50     3.79     0.91     0.28     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.985       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   367.2084   124.6259   345.4134  1079.8754     0.3400    -0.1955     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   8.7556     8.0908   491.9390   482.2929     4.0029    19.8396    30.6000    10.7604

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   341.2035    72.3376   333.4473  1081.5011     0.3155    -0.0500     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500     8.7463     8.1706   493.4186   482.2319   491.5697     0.0266     0.1575

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   354.0725     0.0000   354.0725  1080.7107     0.3276     0.0189     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1033	492.7000	482.2209	0.0000	0.0600	0.0730	-0.1697

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7931	8.7202	1.0351	502.7703	5.9903	305.8959	2.3713

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
37292.016	0.366	107.203	472668.094	0.275632E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =-0.421 EfDer = 0.943 SH = 0.276185E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
50.870	1792.283	8.720	502.770	1.000	1.000	0.980

W Kg/sec = 23.123 Wdry = 50.856 WH2O = 0.014 lbm/sec H2O = 0.200g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
84.427	1820.455	1.381	0.249	53.357	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
67696.578	39910.633	2.207	545.479	247.182	424.468	1.717

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	297.85	-0.10	297.85	0.27	0.40	318.83
MEAN	17.74	0.00	-0.02	297.85	-0.10	297.85	0.27	0.38	
HUB	15.05	0.00	-0.02	297.85	-0.10	297.85	0.27	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	46.51	46.36	0.15	313.91	432.80	8.28	495.64	482.13	3.54
MEAN	42.98	43.40	-0.42	277.44	407.12	8.28	495.64	482.13	3.54
HUB	38.33	38.84	-0.51	235.39	379.70	8.28	495.64	482.13	3.54

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	335.11	78.93	325.68	1086.16	0.31	2.26	1.98	8.75
MEAN	17.51	341.80	104.71	325.36	1086.50	0.31	2.34	2.07	6.78
HUB	14.85	367.90	171.65	325.40	1086.84	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	309.84	399.24	230.91	0.37	1565.61	0.92	0.86		
MEAN	273.81	366.68	169.10	0.34	1834.98	0.92	0.86	0.86	1.18
HUB	232.26	330.99	60.61	0.30	2550.59	0.92	0.86		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.94	1.02	8.37	506.70	1.01	497.68	484.46	3.31
MEAN	8.97	1.03	8.39	507.38	1.01	498.00	484.86	3.27
HUB	9.07	1.04	8.39	509.18	1.01	498.31	485.92	3.24

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	13.62	35.34	31.50	3.84	0.93	0.14	1.40
MEAN	17.84	27.46	23.50	3.96	0.90	0.18	1.62
HUB	27.81	10.55	6.50	4.05	0.90	0.24	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.943	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	382.1578	105.3997	367.3357	1084.3422	0.3524	-0.2100	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.9878	8.2574	496.0239	485.1354	3.4846	16.0098	31.5000	15.4902

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	369.3446	80.5700	360.4496	1085.1913	0.3403	-0.1554	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.9699	8.2877	496.7970	485.0863	451.3937	0.0392	0.1132

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    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   376.8004     0.0000   376.8004  1084.7020     0.3474    -0.0453     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2243   496.3502   485.0465     0.0000     0.0600     0.1039    -0.2591

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6649     8.9304     1.0241   507.7545     4.9844   347.8526     2.6965

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  31031.092       0.323      89.205  478568.063   0.276768E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =-3.512   EfDer =  0.883    SH =  0.277323E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     50.870    1792.283       8.930     507.754       1.000       1.000       0.980
 W Kg/sec =  23.123  Wdry =  50.856  WH2O = 0.014  lbm/sec   H2O =   0.203g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     82.847    1811.498       1.381       0.249      53.357      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66998.789   39910.617       2.116     513.330     242.558     395.845       1.632

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   313.24    -0.11   313.24     0.29     0.40   304.46
 MEAN    16.97     0.00    -0.02   313.24    -0.11   313.24     0.29     0.38
 HUB     14.32     0.00    -0.02   313.24    -0.11   313.24     0.29     0.35

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     43.89    46.36    -2.47   301.24   434.66     8.44   499.87   484.94     3.07
 MEAN    40.29    43.80    -3.51   265.43   410.65     8.44   499.87   484.94     3.07
 HUB     35.58    37.84    -2.26   223.97   385.14     8.44   499.87   484.94     3.07

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   345.75    51.53   341.89  1089.33     0.32     2.16     1.89     8.34
 MEAN    16.57   350.60    80.87   341.15  1090.04     0.32     2.24     1.97     6.35
 HUB     13.89   373.75   153.14   340.93  1090.73     0.34     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    295.29   419.89   243.77     0.39   974.92     0.92     0.81
 MEAN   259.23   384.96   178.35     0.35  1342.18     0.92     0.81     0.81     1.13
 HUB    217.25   346.91    64.11     0.32  2128.64     0.92     0.81

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      9.06     1.01     8.45   510.20     1.00   500.60   486.36     2.99
 MEAN     9.11     1.02     8.48   511.13     1.01   501.25   486.88     2.93
 HUB      9.21     1.03     8.50   513.10     1.01   501.88   488.00     2.86

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      8.57    35.49    31.50     3.99     0.93     0.08     1.40
 MEAN    13.34    27.60    23.50     4.10     0.89     0.12     1.62
 HUB     24.19    10.65     6.50     4.15     0.89     0.20     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.883       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   384.6487    81.3258   375.9531  1088.2328     0.3535    -0.1724     2.1803

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    9.1175     8.3725   499.5940   487.1223     3.0836    12.2061    32.4000    20.1939

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth       Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   385.7268    86.5072   375.9011  1088.1642     0.3545    -0.2086     2.2705
```

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.0916	8.3447	499.5270	487.0879	432.2457	0.0501	0.0773

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	384.2344	0.0000	384.2344	1088.2654	0.3531	-0.0951	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.3016	499.6192	487.0105	0.0000	0.0600	0.1323	-0.2755

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.4537	9.0386	1.0121	511.4777	3.7234	430.6671	3.3385

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
23181.170	0.266	66.639	498542.094	0.277885E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-6.383 EfDer = 0.820 SH = 0.278435E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
50.870	1792.283	9.039	511.478	1.000	1.000	0.980

W Kg/sec = 23.123 Wdry = 50.856 WH2O = 0.014 lbm/sec H2O = 0.205g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
82.155	1804.892	1.381	0.249	53.357	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
66674.844	39910.598	2.119	509.668	240.532	384.739	1.600

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	313.97	-0.11	313.97	0.29	0.39	288.54
MEAN	15.91	0.00	-0.02	313.97	-0.11	313.97	0.29	0.37	
HUB	13.07	0.00	-0.02	313.97	-0.11	313.97	0.29	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	42.40	47.36	-4.96	286.54	425.14	8.54	503.56	486.90	2.71
MEAN	38.42	44.80	-6.38	248.89	400.72	8.54	503.56	486.90	2.71
HUB	33.08	38.84	-5.76	204.42	374.71	8.54	503.56	486.90	2.71

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	344.85	33.37	343.23	1092.41	0.32	2.05	1.78	7.43
MEAN	15.50	348.00	61.72	342.48	1093.19	0.32	2.13	1.86	5.75
HUB	12.59	366.89	132.02	342.32	1093.94	0.34	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	280.59	423.00	247.23	0.39	600.58	0.92	0.75		
MEAN	242.39	387.21	180.67	0.35	958.27	0.92	0.75	0.75	1.10
HUB	196.92	348.41	64.89	0.32	1663.58	0.92	0.75		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.11	1.01	8.51	512.99	1.00	503.43	487.76	2.71
MEAN	9.15	1.01	8.54	513.89	1.00	504.16	488.25	2.65
HUB	9.24	1.02	8.56	515.66	1.01	504.85	489.22	2.58

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	5.55	35.76	31.50	4.26	0.93	0.03	1.40
MEAN	10.22	27.81	23.50	4.31	0.87	0.08	1.64
HUB	21.09	10.73	6.50	4.23	0.87	0.16	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.820	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	397.9055	62.8541	392.9099	1090.2596	0.3650	-0.2853	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1565	8.3616	501.4596	488.4745	2.8763	9.0886	33.0000	23.9114

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   411.8685    94.0505   400.9865  1089.2782     0.3781    -0.4489     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.0973     8.2531   500.5510   488.4172   410.5396     0.1137     0.0508

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   400.4393     0.0000   400.4393  1090.0924     0.3673    -0.1033     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2795   501.2964   488.3655     0.0000     0.0600     0.1453    -0.4071

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.2232     9.0773     1.0043   514.1764     2.6988   546.9078     4.2396

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  16802.309       0.213      48.302  530669.063   0.279027E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0546   Tt4 =   514.1764   T1  =   487.5555

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    165730.47    476.4251     91.3165      1.1433      0.6892      5.3937     1.0546     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 15435 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 6.464   EfDer =  1.000    SH =  0.460297E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     49.713    1582.119       9.337     500.813       1.000       1.000       0.980
  W Kg/sec =  22.597  Wdry =  49.690  WH2O = 0.023  lbm/sec   H2O =   0.367g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.903    1610.127       1.381       0.249      53.363      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60042.984   38999.914       3.693     831.557     225.186     619.754       2.752

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   173.29    -0.06   173.29     0.16     0.31   289.86
 MEAN    17.06     0.00    -0.02   173.29    -0.06   173.29     0.16     0.27
 HUB     12.51     0.00    -0.02   173.29    -0.06   173.29     0.16     0.23

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.69    50.47     8.22   284.83   333.46     9.18   498.40   482.30     5.87
 MEAN    53.66    47.20     6.46   235.54   292.47     9.18   498.40   482.30     5.87
 HUB     44.92    38.62     6.30   172.72   244.71     9.18   498.40   482.30     5.87

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   286.13   155.78   240.00  1090.11      0.26     7.29     6.52    16.04
 MEAN    18.04   298.46   176.31   240.81  1089.40      0.27     7.43     6.80    12.53
 HUB     15.00   335.12   231.35   242.46  1088.07      0.31     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    284.83   272.49   129.05     0.25  3215.07      0.92     0.91
 MEAN   249.02   251.55    72.70     0.23  3180.99      0.92     0.91     0.91     1.30
 HUB    207.10   243.67    24.25     0.22  3470.96      0.92     0.91

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP       9.79     1.05     9.33   507.94     1.01   501.37   486.70     5.34
 MEAN      9.78     1.05     9.29   507.86     1.01   500.71   486.68     5.46
 HUB       9.82     1.05     9.20   508.51     1.02   499.49   487.14     5.67

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      32.99    28.27    24.20     4.07     0.93     0.31     1.80
 MEAN     36.21    16.80    12.70     4.10     0.93     0.28     2.22
 HUB      43.66    -5.71    -9.30     3.59     0.93     0.17     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       1.000       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   312.4956   175.9697   258.2405  1088.9121     0.2870    -0.0701     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     9.7911     9.2541   500.2640   486.8479     5.5332    34.2712    35.4000     1.1288

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   263.4014    64.4360   255.3983  1091.3776     0.2413     0.2502     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     9.7903     9.4066   502.5335   486.7440   554.9116     0.0114     0.3650

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   261.3619     0.0000   261.3619  1091.4661     0.2395     0.2710     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     9.3996   502.6195   486.7254     0.0000     0.0600     0.0370     0.2368
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8770     9.7770     1.0471   508.1024     7.2900   217.3285     1.6847

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  45416.004       0.560     127.587  485552.625   0.463505E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.939   EfDer =  0.992    SH =  0.466217E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     49.713    1582.119       9.777     508.102       1.000       1.000       0.980
 W Kg/sec =  22.597  Wdry =  49.689  WH2O = 0.023  lbm/sec   H2O =   0.379g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.977    1598.533       1.380       0.249      53.363      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58830.180   38999.824       2.726     590.487     216.618     468.502       2.163

ROTOR LEADING EDGE CONDITIONS, STAGE   2

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   239.11    -0.08   239.11     0.22     0.34   286.66
 MEAN    18.08     0.00    -0.02   239.11    -0.08   239.11     0.22     0.32
 HUB     15.21     0.00    -0.02   239.11    -0.08   239.11     0.22     0.29

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.89    46.36     3.53   283.73   371.11     9.46   503.51   486.69     5.03
 MEAN    46.24    42.30     3.94   249.60   345.71     9.46   503.51   486.69     5.03
 HUB     41.30    37.84     3.46   210.00   318.29     9.46   503.51   486.69     5.03

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   279.17    98.37   261.27  1095.46     0.25     2.33     2.04     9.02
 MEAN    18.01   285.41   114.31   261.52  1095.27     0.26     2.40     2.13     7.35
 HUB     15.22   308.39   162.83   261.90  1095.09     0.28     2.45     2.27     4.53

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    281.93   319.31   183.56     0.29  2010.37     0.92     0.91
 MEAN   248.66   294.01   134.34     0.27  2060.27     0.92     0.91     0.91     1.27
 HUB    210.18   266.15    47.35     0.24  2479.98     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.06     1.03     9.62   512.56     1.01   506.30   489.31     4.61
 MEAN    10.07     1.03     9.61   512.67     1.01   506.13   489.38     4.63
 HUB     10.13     1.04     9.59   513.60     1.01   505.97   489.95     4.65

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     20.63    35.09    31.50     3.59     0.93     0.23     1.40
 MEAN    23.61    27.19    23.50     3.69     0.92     0.25     1.63
 HUB     31.87    10.25     6.50     3.75     0.92     0.29     1.97


  blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
     0.950       1.000       0.992       0.567      73.000

   ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
   R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
  17.9595   315.9354   114.6342   294.4048  1093.9656     0.2888    -0.1855     2.3644

   Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
  10.0825     9.5227   504.9305   489.5962     4.8016    21.2748    30.6000     9.3252

   STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
  RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
  17.9595   291.1090    61.7172   284.4915  1095.2773     0.2658    -0.0180     2.4513

  BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
   0.9500    10.0777     9.6012   506.1400   489.5370   491.5697     0.0200     0.1760

   VANED DIFFUSER EXIT:
  R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
  17.8235   301.4410     0.0000   301.4410  1094.7430     0.2754     0.0438     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.5472	505.6486	489.5318	0.0000	0.0600	0.0646	-0.1310

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8185	10.0564	1.0286	512.9418	4.8395	292.4895	2.2674

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
30151.537	0.379	84.705	449828.469	0.467087E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 0.475 EfDer = 0.957 SH = 0.468075E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.713	1582.119	10.056	512.942	1.000	1.000	0.980

W Kg/sec = 22.597 Wdry = 49.689 WH2O = 0.023 lbm/sec H2O = 0.387g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.263	1590.975	1.380	0.249	53.363	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
57913.648	38999.797	2.578	545.479	211.602	424.468	2.006

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	254.81	-0.09	254.81	0.23	0.34	278.64
MEAN	17.74	0.00	-0.02	254.81	-0.09	254.81	0.23	0.32	
HUB	15.05	0.00	-0.02	254.81	-0.09	254.81	0.23	0.30	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	47.41	46.36	1.05	277.10	376.51	9.69	507.73	489.45	4.41
MEAN	43.88	43.40	0.48	244.91	353.48	9.69	507.73	489.45	4.41
HUB	39.21	38.84	0.37	207.79	328.85	9.69	507.73	489.45	4.41

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	288.90	76.15	278.69	1099.00	0.26	2.26	1.98	8.75
MEAN	17.51	295.05	97.15	278.59	1099.15	0.27	2.34	2.07	6.78
HUB	14.85	318.11	153.37	278.69	1099.30	0.29	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	273.51	341.49	197.36	0.31	1510.36	0.92	0.88		
MEAN	241.71	313.86	144.55	0.29	1702.40	0.92	0.88	0.88	1.20
HUB	205.03	283.44	51.66	0.26	2278.88	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.27	1.02	9.79	516.29	1.01	509.59	491.36	4.16
MEAN	10.29	1.02	9.80	516.71	1.01	509.73	491.61	4.14
HUB	10.37	1.03	9.80	517.99	1.01	509.87	492.35	4.12

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	15.28	35.30	31.50	3.80	0.93	0.16	1.40
MEAN	19.23	27.42	23.50	3.92	0.90	0.20	1.62
HUB	28.82	10.50	6.50	4.00	0.90	0.26	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.957	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	328.3093	97.7920	313.4066	1097.6541	0.2991	-0.1996	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.3064	9.6942	508.3478	491.8291	4.3134	17.3294	31.5000	14.1706

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	314.9861	68.7121	307.4003	1098.3998	0.2868	-0.1222	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.2958	9.7319	509.0356	491.7859	451.3937	0.0305	0.1303

```
    VANED DIFFUSER EXIT:
   R4         C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   17.1214   320.6933     0.0000   320.6933  1098.0842     0.2920    -0.0228     0.5709

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.6803   508.7444   491.7556     0.0000     0.0600     0.0950    -0.2222

    STAGE EXIT CONDITIONS, STAGE            3
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.7087    10.2624     1.0205   516.9987     4.0569   331.2360     2.5677

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  25277.090       0.338      71.011  455894.188   0.468898E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   4
  BLEED =  0.000   DPInc =-2.641   EfDer =  0.902    SH =  0.469807E-03

   W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     49.713    1582.119      10.262     516.999       1.000       1.000       0.980
 W Kg/sec =  22.597  Wdry =  49.689  WH2O = 0.023  lbm/sec   H2O =   0.392g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     71.092    1584.720       1.380       0.249      53.364      77.000       0.050

   CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57352.496   38999.773       2.466     513.330     208.173     395.845       1.902

ROTOR LEADING EDGE CONDITIONS, STAGE   4

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     19.26     0.00    -0.02   268.14    -0.09   268.14     0.24     0.34   266.34
 MEAN    16.97     0.00    -0.02   268.14    -0.09   268.14     0.24     0.32
 HUB     14.32     0.00    -0.02   268.14    -0.09   268.14     0.24     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     44.77    46.36    -1.59   265.92   377.70     9.85   511.23   491.66     3.95
 MEAN    41.16    43.80    -2.64   234.31   356.15     9.85   511.23   491.66     3.95
 HUB     36.42    37.84    -1.42   197.71   333.21     9.85   511.23   491.66     3.95

ROTOR EXIT CONDITIONS, STAGE   4    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     18.88   296.92    52.49   292.25  1101.72     0.27     2.16     1.89     8.34
 MEAN    16.57   301.74    76.44   291.89  1102.13     0.27     2.24     1.97     6.35
 HUB     13.89   322.42   137.06   291.83  1102.53     0.29     2.26     2.10     4.19

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    260.67   358.81   208.18     0.33   992.79     0.92     0.82
 MEAN   228.83   329.28   152.39     0.30  1268.50     0.92     0.82     0.82     1.15
 HUB    191.77   296.92    54.71     0.27  1905.15     0.92     0.82

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     10.39     1.01     9.89   519.20     1.00   512.12   492.89     3.84
 MEAN    10.43     1.02     9.91   519.81     1.01   512.50   493.23     3.79
 HUB     10.52     1.02     9.92   521.22     1.01   512.88   494.02     3.74

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     10.18    35.46    31.50     3.96     0.93     0.10     1.40
 MEAN    14.68    27.57    23.50     4.07     0.89     0.14     1.62
 HUB     25.16    10.62     6.50     4.12     0.89     0.21     1.94


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.902       0.524      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
   16.4812   329.7592    76.8714   320.6742  1100.8849     0.2995    -0.1641     2.1803

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
   10.4412     9.8193   511.3493   493.4235     3.9217    13.4805    32.4000    18.9195

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   328.3530    73.6400   319.9888  1100.9681     0.2982    -0.1769     2.2705
```

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	10.4248	9.8090	511.4234	493.3990	432.2457	0.0403	0.0935

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	326.6282	0.0000	326.6282	1101.0658	0.2966	-0.0762	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	9.7719	511.5140	493.3346	0.0000	0.0600	0.1255	-0.2455

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.5219	10.3786	1.0113	520.0765	3.0779	405.4850	3.1433

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
19177.479	0.282	53.875	475193.625	0.470600E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-5.508 EfDer = 0.839 SH = 0.471520E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
49.713	1582.119	10.379	520.077	1.000	1.000	0.980

W Kg/sec = 22.597 Wdry = 49.689 WH2O = 0.023 lbm/sec H2O = 0.396g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.505	1580.024	1.380	0.249	53.364	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
57044.168	38999.746	2.469	509.668	206.455	384.739	1.864

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	268.62	-0.09	268.62	0.24	0.33	252.59
MEAN	15.91	0.00	-0.02	268.62	-0.09	268.62	0.24	0.31	
HUB	13.07	0.00	-0.02	268.62	-0.09	268.62	0.24	0.29	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	43.29	47.36	-4.07	252.94	369.03	9.97	514.29	493.23	3.58
MEAN	39.29	44.80	-5.51	219.70	347.08	9.97	514.29	493.23	3.58
HUB	33.91	38.84	-4.93	180.45	323.65	9.97	514.29	493.23	3.58

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	295.29	36.82	292.99	1104.32	0.27	2.05	1.78	7.43
MEAN	15.50	298.66	59.75	292.63	1104.78	0.27	2.13	1.86	5.75
HUB	12.59	315.69	118.52	292.60	1105.22	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	247.69	360.98	210.87	0.33	662.32	0.92	0.77		
MEAN	213.97	330.78	154.22	0.30	927.44	0.92	0.77	0.77	1.12
HUB	173.83	297.78	55.30	0.27	1493.41	0.92	0.77		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	10.46	1.01	9.96	521.54	1.00	514.55	494.04	3.55
MEAN	10.49	1.01	9.98	522.13	1.00	514.97	494.36	3.50
HUB	10.56	1.02	9.99	523.39	1.01	515.39	495.04	3.45

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	7.16	35.74	31.50	4.24	0.93	0.06	1.40
MEAN	11.54	27.79	23.50	4.29	0.87	0.10	1.64
HUB	22.05	10.70	6.50	4.20	0.87	0.17	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.839	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	339.5204	60.8445	334.0240	1102.7671	0.3079	-0.2727	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
10.4952	9.8363	513.1027	494.5425	3.6966	10.3236	33.0000	22.6764

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   348.3947    79.5562   339.1898  1102.2455     0.3161    -0.3989     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500    10.4561     9.7657   512.6124   494.5106   410.5396     0.0940     0.0656

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   339.2617     0.0000   339.2617  1102.7892     0.3076    -0.0907     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     9.7765   513.1163   494.4556     0.0000     0.0600     0.1424    -0.3784

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.3138    10.4305     1.0050   522.3540     2.2775   506.8609     3.9292

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  14190.972       0.231      39.867  506359.313   0.472337E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0430   Tt4 =   522.3540   T1  =   500.8125

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    134213.08    377.0453     76.9027      1.1171      0.7203      6.4643      1.0430     37.3740
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100µm, ISA +36R

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*********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
*********************************************************************

       Fan Core + 4 Stage LPC 10% 39000 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.093   EfDer =  0.958    SH =  0.908425E-04

    W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.373    2465.077       4.265     477.918       1.000       1.000       0.980
  W Kg/sec =  11.988  Wdry =  26.371  WH2O = 0.002  lbm/sec   H2O =   0.035g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     87.260    2568.094       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  66790.227   20692.744       3.256     831.557     255.430     619.754       2.426

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   192.77    -0.07   192.77     0.18     0.46   462.32
 MEAN    17.06     0.00    -0.02   192.77    -0.07   192.77     0.18     0.39
 HUB     12.51     0.00    -0.02   192.77    -0.07   192.77     0.18     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.52    50.47    16.05   443.79   483.91      4.17   474.93   460.63     1.39
 MEAN    62.29    47.20    15.09   367.00   414.60      4.17   474.93   460.63     1.39
 HUB     54.39    38.62    15.77   269.11   331.08      4.17   474.93   460.63     1.39

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   398.81   304.11   258.01  1074.42      0.37     7.29     6.52    16.04
 MEAN    18.04   404.26   308.37   261.40  1071.31      0.38     7.43     6.80    12.53
 HUB     15.00   438.82   348.91   266.13  1067.45      0.41     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    443.79   293.39   139.68     0.27  6275.13      0.92     0.88
 MEAN   387.99   273.26    79.62     0.26  5562.90      0.92     0.88     0.88     1.74
 HUB    322.68   267.42    26.24     0.25  5234.54      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.91     1.15     4.47   499.63     1.05   486.84   473.12     0.91
 MEAN     4.84     1.13     4.39   497.16     1.04   484.02   471.80     1.00
 HUB      4.80     1.13     4.28   496.03     1.04   480.54   471.21     1.13

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.69    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    49.71    16.94    12.70     4.24     0.95     0.51     2.22
 HUB     52.67    -5.63    -9.30     3.67     0.95     0.38     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.958       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3        Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   416.3328   307.7709   280.3749  1070.9081     0.3888    -0.0371     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.8446     4.3708   483.6685   472.0388     1.0176    47.6669    35.4000   -12.2669

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   278.2785    68.0754   269.8234  1079.4069     0.2578     0.5066     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.8331     4.6176   491.3800   471.9306   554.9116     0.0343     0.5988

     VANED DIFFUSER EXIT:
    R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   277.0878     0.0000   277.0878  1079.4529     0.2567     0.4792     1.3089
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.5978	491.4332	471.8736	0.0000	0.0600	0.0824	0.4645

STAGE EXIT CONDITIONS, STAGE 1

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8208	4.8105	1.1280	497.6069	19.6899	169.7458	1.3159

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
122439.500	0.622	182.479	267774.969	0.929228E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 2
BLEED = 0.000 DPInc =14.627 EfDer = 0.961 SH = 0.947894E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.373	2465.077	4.811	497.607	1.000	1.000	0.980

W Kg/sec = 11.988 Wdry = 26.370 WH2O = 0.002 lbm/sec H2O = 0.039g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.934	2516.781	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62323.992	20692.711	2.556	590.487	231.060	468.502	2.028

ROTOR LEADING EDGE CONDITIONS, STAGE 2

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.55	0.00	-0.02	253.31	-0.09	253.31	0.23	0.47	451.33
MEAN	18.08	0.00	-0.02	253.31	-0.09	253.31	0.23	0.43	
HUB	15.21	0.00	-0.02	253.31	-0.09	253.31	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	60.19	46.36	13.83	442.07	509.58	4.63	492.45	471.87	0.77
MEAN	56.93	42.30	14.63	388.90	464.19	4.63	492.45	471.87	0.77
HUB	52.26	37.84	14.42	327.20	413.86	4.63	492.45	471.87	0.77

ROTOR EXIT CONDITIONS, STAGE 2 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	20.42	366.89	251.97	266.68	1093.80	0.34	2.33	2.04	9.02
MEAN	18.01	367.03	249.31	269.36	1091.34	0.34	2.40	2.13	7.35
HUB	15.22	389.62	278.63	272.33	1088.91	0.36	2.45	2.27	4.53

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	439.27	325.88	187.30	0.30	5147.08	0.92	0.88		
MEAN	387.43	302.70	138.11	0.28	4491.69	0.92	0.88	0.88	1.69
HUB	327.48	276.68	48.84	0.25	4242.96	0.92	0.88		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.38	1.12	4.98	515.41	1.04	504.59	481.05	0.52
MEAN	5.31	1.10	4.91	513.15	1.03	502.31	479.93	0.56
HUB	5.28	1.10	4.84	512.29	1.03	500.08	479.52	0.60

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	43.38	35.08	31.50	3.58	0.93	0.54	1.40
MEAN	42.79	27.15	23.50	3.65	0.95	0.51	1.63
HUB	45.66	10.17	6.50	3.67	0.95	0.50	1.97

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.961	0.567	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.9595	393.0298	250.0125	303.2593	1090.1068	0.3605	-0.1096	2.3644

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.3183	4.8670	501.1943	480.1691	0.5772	39.5028	30.6000	-8.9028

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.9595	293.4253	62.2083	286.7552	1096.0673	0.2677	0.3566	2.4513

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.3125	5.0577	506.6919	480.1088	491.5697	0.0241	0.4543

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.8235	304.1313	0.0000	304.1313	1095.5004	0.2776	0.3483	0.5911

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0242	506.1777	480.0712	0.0000	0.0600	0.0623	0.2752

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8373	5.2968	1.1011	513.6143	16.0079	191.4926	1.4844

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
99558.648	0.516	148.378	243201.391	0.953803E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.642 EfDer = 0.976 SH = 0.961172E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.373	2465.077	5.297	513.614	1.000	1.000	0.980

W Kg/sec = 11.988 Wdry = 26.370 WH2O = 0.003 lbm/sec H2O = 0.042g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
72.832	2477.252	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
58419.504	20692.699	2.559	545.479	213.201	424.468	1.991

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	257.03	-0.09	257.03	0.23	0.46	433.86
MEAN	17.74	0.00	-0.02	257.03	-0.09	257.03	0.23	0.42	
HUB	15.05	0.00	-0.02	257.03	-0.09	257.03	0.23	0.38	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.24	46.36	12.88	431.74	502.54	5.10	508.30	480.06	0.47
MEAN	56.04	43.40	12.64	381.59	460.16	5.10	508.30	480.06	0.47
HUB	51.56	38.84	12.72	323.75	413.45	5.10	508.30	480.06	0.47

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	358.78	235.60	270.58	1109.73	0.32	2.26	1.98	8.75
MEAN	17.51	360.90	236.13	272.93	1107.63	0.33	2.34	2.07	6.78
HUB	14.85	385.42	269.51	275.52	1105.56	0.35	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	426.15	330.94	190.55	0.30	4669.06	0.92	0.89		
MEAN	376.60	306.95	140.47	0.28	4135.45	0.92	0.89	0.89	1.64
HUB	319.45	280.01	49.95	0.25	4003.50	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.86	1.11	5.45	529.76	1.03	519.42	487.75	0.33
MEAN	5.79	1.09	5.38	527.92	1.03	517.45	486.91	0.35
HUB	5.77	1.09	5.31	527.46	1.03	515.52	486.71	0.37

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	41.05	35.15	31.50	3.65	0.93	0.51	1.40
MEAN	40.87	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.37	10.27	6.50	3.77	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.976	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	388.0721	237.6827	306.7684	1106.3553	0.3508	-0.1174	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.8023	5.3349	516.2747	487.1213	0.3650	37.7683	31.5000	-6.2683

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	301.9044	65.8584	294.6335	1111.4634	0.2716	0.3050	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7986	5.5125	521.0544	487.0793	451.3937	0.0187	0.4292

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	306.9981	0.0000	306.9981	1111.1865	0.2763	0.3329	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4905	520.8052	487.0457	0.0000	0.0600	0.0498	0.2529

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8575	5.7855	1.0923	528.3816	14.7677	196.9344	1.5266

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
91858.898	0.506	136.903	241682.203	0.966885E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =11.056 EfDer = 0.986 SH = 0.974041E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
26.373	2465.077	5.785	528.381	1.000	1.000	0.980

W Kg/sec = 11.988 Wdry = 26.370 WH2O = 0.003 lbm/sec H2O = 0.045g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
67.632	2442.389	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54981.086	20692.689	2.593	513.330	197.983	395.845	1.999

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	257.06	-0.09	257.06	0.23	0.44	410.49
MEAN	16.97	0.00	-0.02	257.06	-0.09	257.06	0.23	0.40	
HUB	14.32	0.00	-0.02	257.06	-0.09	257.06	0.23	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.19	46.36	11.83	414.32	487.66	5.58	523.07	487.03	0.30
MEAN	54.86	43.80	11.06	365.07	446.56	5.58	523.07	487.03	0.30
HUB	50.16	37.84	12.32	308.05	401.28	5.58	523.07	487.03	0.30

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	345.49	215.78	269.81	1123.99	0.31	2.16	1.89	8.34
MEAN	16.57	347.54	216.42	271.93	1122.09	0.31	2.24	1.97	6.35
HUB	13.89	370.51	249.15	274.23	1120.23	0.33	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	406.14	330.21	190.36	0.29	4075.71	0.92	0.90		
MEAN	356.53	305.90	140.11	0.27	3588.44	0.92	0.90	0.90	1.60
HUB	298.80	278.69	49.65	0.25	3461.99	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.31	1.09	5.91	542.48	1.03	532.88	493.34	0.23
MEAN	6.24	1.08	5.85	540.79	1.02	531.08	492.61	0.24
HUB	6.23	1.08	5.78	540.35	1.02	529.32	492.42	0.25

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.65	35.20	31.50	3.70	0.93	0.48	1.40
MEAN	38.52	27.26	23.50	3.76	0.94	0.46	1.62
HUB	42.26	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.986	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	369.1907	217.6379	298.2206	1121.1995	0.3293	-0.0930	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.2539	5.8072	530.2519	492.7838	0.2466	36.1215	32.4000	-3.7215

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   16.4812   299.5086    67.1710   291.8792  1125.1500     0.2662     0.2678     2.2705

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.2520     5.9554   533.9973   492.7579   432.2457     0.0146     0.4078

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   297.1122     0.0000   297.1122  1125.2611     0.2640     0.3186     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9495   534.1124   492.7278     0.0000     0.0600     0.0413     0.2536

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8705     6.2409     1.0787   541.2076    12.8265   212.3262     1.6459

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  79796.227       0.484     118.925  247257.016   0.980550E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.604   EfDer =  0.993    SH =  0.988896E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     26.373    2465.077       6.241     541.207       1.000       1.000       0.980
 W Kg/sec =  11.988  Wdry =  26.370  WH2O = 0.003  lbm/sec   H2O =   0.048g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     63.453    2413.275       1.381       0.249      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  52049.906   20692.678       2.744     509.668     185.753     384.739       2.071

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   245.10    -0.08   245.10     0.22     0.41   385.80
 MEAN    15.91     0.00    -0.02   245.10    -0.08   245.10     0.22     0.37
 HUB     13.07     0.00    -0.02   245.10    -0.08   245.10     0.22     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.13    47.36    10.77   394.10   464.17      6.04   536.38   492.72     0.21
 MEAN    54.40    44.80     9.60   342.32   421.09      6.04   536.38   492.72     0.21
 HUB     48.93    38.84    10.09   281.16   373.06      6.04   536.38   492.72     0.21

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     17.94   328.03   202.75   257.87  1136.81      0.29     2.05     1.78     7.43
 MEAN    15.50   327.18   198.70   259.93  1134.85      0.29     2.13     1.86     5.75
 HUB     12.59   344.36   223.31   262.13  1132.91      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    385.92   316.31   183.17     0.28  3638.86      0.92     0.91
 MEAN   333.38   292.75   134.69     0.26  3080.64      0.92     0.91     0.91     1.59
 HUB    270.83   266.40    47.52     0.24  2812.61      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.73     1.08     6.36   553.79     1.02   545.14   498.07     0.17
 MEAN     6.66     1.07     6.29   551.86     1.02   543.26   497.27     0.18
 HUB      6.62     1.06     6.21   550.93     1.02   541.40   496.89     0.18

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.18    35.39    31.50     3.89     0.93     0.47     1.40
 MEAN    37.39    27.39    23.50     3.89     0.94     0.45     1.64
 HUB     40.43    10.28     6.50     3.78     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.993       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   358.4227   202.3385   295.8479  1133.3831     0.3162    -0.1732     2.0437
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    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6609     6.2205   541.8698   497.3965     0.1825    34.3693    33.0000    -1.3693

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   302.3682    69.0460   294.3793  1136.4908     0.2661     0.1495     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6589     6.3433   544.8466   497.3767   410.5396     0.0252     0.3836

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   294.1221     0.0000   294.1221  1136.8942     0.2587     0.3069     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.3556   545.2419   497.3628     0.0000     0.0600     0.0372     0.1818

    STAGE EXIT CONDITIONS, STAGE             5
    Eff4      Pt4          PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8794     6.6543     1.0662   552.1941    10.9871   231.9936     1.7984

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  68363.391       0.459     101.886  259212.141   0.995576E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1554   Tt4 =   552.1941   T1  =   477.9176

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    462016.69    688.5695     87.2603      1.5604      0.8406     15.0933      1.1554     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 38334 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.204   EfDer =  0.957    SH =  0.880660E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.399    2387.497       4.199     471.473       1.000       1.000       0.980
  W Kg/sec =  11.545  Wdry =  25.397  WH2O = 0.002  lbm/sec   H2O =   0.033g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     84.771    2504.213       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  64384.207   19929.014       3.351     831.557     248.142     619.754       2.498

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   185.82    -0.06   185.82     0.18     0.44   450.82
 MEAN    17.06     0.00    -0.02   185.82    -0.06   185.82     0.18     0.38
 HUB     12.51     0.00    -0.02   185.82    -0.06   185.82     0.18     0.30

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.62    50.47    16.15   429.82   468.33     4.11   468.70   456.85     1.75
 MEAN    62.40    47.20    15.20   355.45   401.14     4.11   468.70   456.85     1.75
 HUB     54.52    38.62    15.90   260.64   320.15     4.11   468.70   456.85     1.75

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.63   386.14   294.87   249.30  1066.71      0.36     7.29     6.52    16.04
 MEAN    18.04   391.24   298.93   252.41  1063.77      0.37     7.43     6.80    12.53
 HUB     15.00   424.30   337.82   256.73  1060.14      0.40     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    429.82   283.49   134.95     0.27  6084.50      0.92     0.88
 MEAN   375.78   263.85    76.85     0.25  5392.57      0.92     0.88     0.88     1.74
 HUB    312.52   257.98    25.29     0.24  5068.04      0.92     0.88

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP       4.80     1.14     4.39   491.86     1.04   479.87   469.19     1.16
 MEAN      4.73     1.13     4.32   489.54     1.04   477.23   467.88     1.28
 HUB       4.70     1.12     4.21   488.46     1.04   473.98   467.29     1.44

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      49.79    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN     49.82    16.93    12.70     4.23     0.95     0.51     2.22
 HUB      52.77    -5.63    -9.30     3.67     0.95     0.38     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.957       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   402.8450   298.3478   270.6894  1063.3987     0.3788    -0.0371     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     4.7407     4.2991   476.9040   468.1147     1.2933    47.7827    35.4000   -12.3827

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   269.1740    65.8482   260.9955  1071.4185     0.2512     0.5079     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     4.7303     4.5297   484.1281   468.0103   554.9116     0.0338     0.5995

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   267.9978     0.0000   267.9978  1071.4637     0.2501     0.4792     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     4.5107   484.1788   467.9592     0.0000     0.0600     0.0832     0.4645
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8195     4.7087     1.1213   489.9543    18.4816   169.2713     1.3122

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 114921.945       0.622     164.953  260306.266   0.900251E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.656   EfDer =  0.961    SH =  0.917661E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.399    2387.497       4.709     489.954       1.000       1.000       0.980
 W Kg/sec =  11.545  Wdry =  25.397  WH2O = 0.002  lbm/sec   H2O =   0.037g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     77.065    2456.536       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  60296.770   19928.984       2.618     590.487     225.588     468.502       2.077

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   245.07    -0.08   245.07     0.23     0.46   440.52
 MEAN    18.08     0.00    -0.02   245.07    -0.08   245.07     0.23     0.42
 HUB     15.21     0.00    -0.02   245.07    -0.08   245.07     0.23     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.22    46.36    13.86   428.16   493.41     4.54   485.12   467.96     0.99
 MEAN    56.96    42.30    14.66   376.66   449.44     4.54   485.12   467.96     0.99
 HUB     52.29    37.84    14.45   316.90   400.67     4.54   485.12   467.96     0.99

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950       77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   355.46   243.83   258.65  1084.99      0.33     2.33     2.04     9.02
 MEAN    18.01   355.59   241.38   261.12  1082.67      0.33     2.40     2.13     7.35
 HUB     15.22   377.41   269.86   263.85  1080.38      0.35     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    425.45   316.05   181.62     0.29  4980.72      0.92     0.88
 MEAN   375.23   293.42   133.85     0.27  4348.82      0.92     0.88     0.88     1.69
 HUB    317.17   268.06    47.31     0.25  4109.30      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.24     1.11     4.87   506.64     1.03   496.48   477.03     0.67
 MEAN     5.17     1.10     4.80   504.53     1.03   494.36   475.93     0.72
 HUB      5.14     1.09     4.73   503.72     1.03   492.27   475.52     0.77

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.31    35.08    31.50     3.58     0.93     0.54     1.40
 MEAN    42.75    27.14    23.50     3.64     0.95     0.51     1.63
 HUB     45.64    10.17     6.50     3.67     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.961       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   380.7375   242.0602   293.8842  1081.5063     0.3520    -0.1097     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.1811     4.7608   493.3081   476.1636     0.7455    39.4769    30.6000    -8.8769

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   284.7384    60.3666   278.2657  1087.1212     0.2619     0.3555     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.1759     4.9379   498.4451   476.1049   491.5697     0.0234     0.4531

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   295.0607     0.0000   295.0607  1086.5874     0.2715     0.3469     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	4.9066	497.9640	476.0714	0.0000	0.0600	0.0621	0.2737

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8371	5.1611	1.0961	504.9641	15.0101	191.4535	1.4841

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
93348.258	0.516	133.987	236645.750	0.922688E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.584 EfDer = 0.977 SH = 0.928924E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.399	2387.497	5.161	504.964	1.000	1.000	0.980

W Kg/sec = 11.545 Wdry = 25.397 WH2O = 0.002 lbm/sec H2O = 0.040g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
71.380	2419.752	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
56705.523	19928.977	2.611	545.479	208.948	424.468	2.031

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	249.49	-0.09	249.49	0.23	0.45	423.79
MEAN	17.74	0.00	-0.02	249.49	-0.09	249.49	0.23	0.41	
HUB	15.05	0.00	-0.02	249.49	-0.09	249.49	0.23	0.37	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.18	46.36	12.82	418.16	487.00	4.98	499.96	476.06	0.60
MEAN	55.98	43.40	12.58	369.58	445.98	4.98	499.96	476.06	0.60
HUB	51.50	38.84	12.66	313.56	400.78	4.98	499.96	476.06	0.60

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	347.86	227.40	263.23	1100.00	0.32	2.26	1.98	8.75
MEAN	17.51	350.01	228.20	265.40	1098.02	0.32	2.34	2.07	6.78
HUB	14.85	373.83	260.84	267.79	1096.09	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	412.74	321.93	185.34	0.29	4506.57	0.92	0.89		
MEAN	364.75	298.46	136.55	0.27	3996.50	0.92	0.89	0.89	1.64
HUB	309.40	272.15	48.56	0.25	3874.79	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.68	1.10	5.30	520.06	1.03	510.33	483.65	0.44
MEAN	5.62	1.09	5.24	518.35	1.03	508.50	482.82	0.46
HUB	5.60	1.09	5.18	517.95	1.03	506.71	482.63	0.49

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.82	35.15	31.50	3.65	0.93	0.50	1.40
MEAN	40.69	27.23	23.50	3.73	0.94	0.49	1.62
HUB	44.25	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.977	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	376.4272	229.6965	298.2230	1096.8142	0.3432	-0.1181	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.6294	5.1943	507.3951	483.0334	0.4764	37.6041	31.5000	-6.1041

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	293.8461	64.1005	286.7694	1101.6123	0.2667	0.3010	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.6262	5.3582	511.8453	482.9924	451.3937	0.0181	0.4258

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	298.7590	0.0000	298.7590	1101.3512	0.2713	0.3297	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.3377	511.6113	482.9624	0.0000	0.0600	0.0491	0.2489

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8581	5.6140	1.0878	518.7871	13.8235	197.4759	1.5308

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
85979.102	0.505	123.410	235465.234	0.933595E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.916 EfDer = 0.987 SH = 0.939932E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.399	2387.497	5.614	518.787	1.000	1.000	0.980

W Kg/sec = 11.545 Wdry = 25.397 WH2O = 0.002 lbm/sec H2O = 0.043g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
66.513	2387.297	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53528.574	19928.967	2.636	513.330	194.705	395.845	2.033

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	250.26	-0.09	250.26	0.23	0.43	401.23
MEAN	16.97	0.00	-0.02	250.26	-0.09	250.26	0.23	0.39	
HUB	14.32	0.00	-0.02	250.26	-0.09	250.26	0.23	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.06	46.36	11.70	401.28	473.00	5.42	513.75	482.95	0.40
MEAN	54.72	43.80	10.92	353.58	433.26	5.42	513.75	482.95	0.40
HUB	50.02	37.84	12.18	298.35	389.49	5.42	513.75	482.95	0.40

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	335.29	207.71	263.21	1113.42	0.30	2.16	1.89	8.34
MEAN	16.57	337.45	208.72	265.15	1111.65	0.30	2.24	1.97	6.35
HUB	13.89	359.89	241.01	267.28	1109.90	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	393.36	322.10	185.65	0.29	3923.20	0.92	0.90		
MEAN	345.31	298.27	136.59	0.27	3460.76	0.92	0.90	0.90	1.59
HUB	289.40	271.62	48.39	0.24	3348.86	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.09	1.09	5.73	531.93	1.03	522.89	489.15	0.30
MEAN	6.04	1.08	5.67	530.38	1.02	521.23	488.44	0.32
HUB	6.02	1.07	5.60	530.01	1.02	519.59	488.28	0.33

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.28	35.20	31.50	3.70	0.93	0.47	1.40
MEAN	38.21	27.26	23.50	3.76	0.94	0.46	1.62
HUB	42.04	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.987	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	358.5936	209.8939	290.7472	1110.7913	0.3228	-0.0939	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.0463	5.6304	520.4346	488.6158	0.3244	35.8260	32.4000	-3.4260

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	292.2931	65.5528	284.8475	1114.4854	0.2623	0.2613	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.0447     5.7661   523.9036   488.5905   432.2457     0.0140     0.4025

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   289.9351     0.0000   289.9351  1114.5945     0.2601     0.3134     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.7607   524.0140   488.5632     0.0000     0.0600     0.0406     0.2474

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8714     6.0345     1.0749   530.7714    11.9847   213.5225     1.6552

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  74552.188       0.482     107.008  241178.313   0.944618E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.390   EfDer =  0.994    SH =  0.951641E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.399    2387.497       6.034     530.771       1.000       1.000       0.980
 W Kg/sec =  11.545  Wdry =  25.397  WH2O = 0.002  lbm/sec   H2O =   0.046g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.589    2360.192       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50809.926   19928.959       2.782     509.668     183.222     384.739       2.100

ROTOR LEADING EDGE CONDITIONS, STAGE   5

        R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP    18.32     0.00    -0.02   239.26    -0.08   239.26     0.21     0.40   377.32
 MEAN   15.91     0.00    -0.02   239.26    -0.08   239.26     0.21     0.37
 HUB    13.07     0.00    -0.02   239.26    -0.08   239.26     0.21     0.32

      BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP    57.92    47.36    10.56   381.69   450.55     5.85   526.17   488.55     0.28
 MEAN   54.19    44.80     9.39   331.54   408.93     5.85   526.17   488.55     0.28
 HUB    48.71    38.84     9.87   272.31   362.55     5.85   526.17   488.55     0.28

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

        R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP    17.94   318.58   194.69   252.17  1125.49     0.28     2.05     1.78     7.43
 MEAN   15.50   318.02   191.26   254.08  1123.66     0.28     2.13     1.86     5.75
 HUB    12.59   334.92   215.83   256.11  1121.85     0.30     2.14     1.98     3.85

       U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP   373.78   309.30   179.09     0.27  3494.20     0.92     0.91
 MEAN  322.89   286.15   131.63     0.25  2965.38     0.92     0.91     0.91     1.58
 HUB   262.31   260.29    46.48     0.23  2718.37     0.92     0.91

        Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP     6.48     1.07     6.14   542.47     1.02   534.32   493.80     0.22
 MEAN    6.42     1.06     6.07   540.70     1.02   532.57   493.02     0.23
 HUB     6.38     1.06     6.00   539.88     1.02   530.86   492.66     0.24

        Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP    37.67    35.38    31.50     3.88     0.93     0.47     1.40
 MEAN   36.97    27.39    23.50     3.89     0.94     0.44     1.64
 HUB    40.12    10.29     6.50     3.79     0.94     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   348.6021   194.7666   289.1183  1122.2469     0.3106    -0.1749     2.0437

    Pt3       Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.4204     6.0102   531.2504   493.1519     0.2411    33.9665    33.0000    -0.9665
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   295.7393    67.5323   287.9255  1125.1342     0.2628     0.1400     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.4188     6.1216   533.9882   493.1329   410.5396     0.0246     0.3769

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   287.6864     0.0000   287.6864  1125.5247     0.2556     0.2997     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.1331   534.3658   493.1197     0.0000     0.0600     0.0369     0.1724

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8800     6.4144     1.0630   541.0179    10.2471   233.9399     1.8135

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  63751.156       0.456      91.505  253109.641   0.957016E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1475   Tt4 =   541.0179   T1  =   471.4733

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    432552.66    620.8639     84.7710      1.5275      0.8409     15.2042      1.1475     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 37357 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.264   EfDer =  0.956    SH =  0.839529E-04

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     25.952    2357.013       4.337     469.501       1.000       1.000       0.980
  W Kg/sec =  11.796  Wdry =  25.950  WH2O = 0.002  lbm/sec   H2O =   0.033g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     83.686    2477.426       1.381       0.248      53.351      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  63400.883   20362.631       3.395     831.557     244.965     619.754       2.530

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   182.98    -0.06   182.98     0.17     0.44   446.00
 MEAN    17.06     0.00    -0.02   182.98    -0.06   182.98     0.17     0.38
 HUB     12.51     0.00    -0.02   182.98    -0.06   182.98     0.17     0.30

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.68    50.47    16.21   424.33   462.17     4.25   466.81   455.95     1.88
 MEAN    62.46    47.20    15.26   350.91   395.81     4.25   466.81   455.95     1.88
 HUB     54.59    38.62    15.97   257.32   315.80     4.25   466.81   455.95     1.88

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   381.11   291.31   245.73  1064.30      0.36     7.29     6.52    16.04
 MEAN    18.04   386.04   295.23   248.73  1061.43      0.36     7.43     6.80    12.53
 HUB     15.00   418.49   333.44   252.89  1057.88      0.40     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    424.33   279.43   133.03     0.26  6010.99      0.92     0.87
 MEAN   370.98   260.01    75.75     0.24  5325.88      0.92     0.87     0.87     1.75
 HUB    308.53   254.11    24.91     0.24  5002.42      0.92     0.87

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      4.95     1.14     4.53   489.39     1.04   477.71   468.28     1.25
 MEAN     4.88     1.12     4.45   487.12     1.04   475.14   466.97     1.38
 HUB      4.84     1.12     4.35   486.05     1.04   471.97   466.37     1.55

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     49.85    28.43    24.20     4.23     0.93     0.57     1.80
 MEAN    49.89    16.94    12.70     4.24     0.95     0.52     2.22
 HUB     52.82    -5.63    -9.30     3.67     0.95     0.38     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.956       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   397.4456   294.6583   266.7199  1061.0659     0.3746    -0.0370     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    4.8839     4.4385   474.8163   467.2017     1.3932    47.8491    35.4000   -12.4491

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   265.4334    64.9331   257.3686  1068.8961     0.2483     0.5087     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     4.8735     4.6714   481.8537   467.1014   554.9116     0.0336     0.6002

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   264.2646     0.0000   264.2646  1068.9410     0.2472     0.4794     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     4.6520   481.9034   467.0528     0.0000     0.0600     0.0836     0.4647
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8188     4.8514     1.1186   487.5192    18.0186   169.0146     1.3102

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 112042.969       0.622     164.320  266707.375   0.857705E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.683   EfDer =  0.961    SH =  0.873991E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.952    2357.013       4.851     487.519       1.000       1.000       0.980
 W Kg/sec =  11.796  Wdry =  25.950  WH2O = 0.002  lbm/sec   H2O =   0.037g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     76.236    2431.220       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59464.215   20362.602       2.646     590.487     223.160     468.502       2.099

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   241.69    -0.08   241.69     0.23     0.46   435.98
 MEAN    18.08     0.00    -0.02   241.69    -0.08   241.69     0.23     0.41
 HUB     15.21     0.00    -0.02   241.69    -0.08   241.69     0.23     0.37

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.24    46.36    13.88   422.69   486.98     4.68   482.82   467.05     1.07
 MEAN    56.98    42.30    14.68   371.85   443.56     4.68   482.82   467.05     1.07
 HUB     52.32    37.84    14.48   312.85   395.40     4.68   482.82   467.05     1.07

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   350.94   240.74   255.35  1082.14      0.32     2.33     2.04     9.02
 MEAN    18.01   351.04   238.34   257.72  1079.88      0.33     2.40     2.13     7.35
 HUB     15.22   372.54   266.45   260.36  1077.64      0.35     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    420.02   311.99   179.27     0.29  4917.65      0.92     0.88
 MEAN   370.44   289.61   132.10     0.27  4293.97      0.92     0.88     0.88     1.69
 HUB    313.12   264.51    46.67     0.25  4057.41      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.39     1.11     5.01   503.79     1.03   493.88   476.12     0.73
 MEAN     5.32     1.10     4.95   501.72     1.03   491.81   475.03     0.78
 HUB      5.29     1.09     4.88   500.94     1.03   489.78   474.62     0.84

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.31    35.07    31.50     3.57     0.93     0.54     1.40
 MEAN    42.76    27.14    23.50     3.64     0.95     0.51     1.63
 HUB     45.66    10.16     6.50     3.66     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.961       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   375.8156   239.0076   290.0220  1078.7449     0.3484    -0.1096     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.3277     4.9040   490.7935   475.2581     0.8093    39.4920    30.6000    -8.8920

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   281.1500    59.6058   274.7589  1084.2251     0.2593     0.3555     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.3226     5.0825   495.7943   475.2017   491.5697     0.0232     0.4529

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   291.3155     0.0000   291.3155  1083.7048     0.2688     0.3466     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.0508	495.3264	475.1697	0.0000	0.0600	0.0622	0.2735

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8368	5.3075	1.0940	502.1500	14.6312	191.3338	1.4832

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
90991.656	0.516	133.446	242558.875	0.878670E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.576 EfDer = 0.977 SH = 0.884804E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.952	2357.013	5.308	502.150	1.000	1.000	0.980

W Kg/sec = 11.796 Wdry = 25.950 WH2O = 0.002 lbm/sec H2O = 0.039g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
70.723	2395.540	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55998.133	20362.592	2.635	545.479	207.024	424.468	2.050

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	246.38	-0.08	246.38	0.23	0.44	419.55
MEAN	17.74	0.00	-0.02	246.38	-0.08	246.38	0.23	0.41	
HUB	15.05	0.00	-0.02	246.38	-0.08	246.38	0.23	0.36	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.18	46.36	12.82	412.82	480.82	5.12	497.27	475.16	0.66
MEAN	55.98	43.40	12.58	364.86	440.33	5.12	497.27	475.16	0.66
HUB	51.49	38.84	12.65	309.56	395.71	5.12	497.27	475.16	0.66

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	343.54	224.32	260.19	1096.79	0.31	2.26	1.98	8.75
MEAN	17.51	345.67	225.16	262.28	1094.87	0.32	2.34	2.07	6.78
HUB	14.85	369.20	257.48	264.59	1092.98	0.34	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	407.47	318.19	183.15	0.29	4445.43	0.92	0.89		
MEAN	360.09	294.95	134.93	0.27	3943.35	0.92	0.89	0.89	1.64
HUB	305.45	268.90	47.97	0.25	3824.87	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	5.83	1.10	5.45	516.85	1.03	507.36	482.74	0.48
MEAN	5.77	1.09	5.39	515.19	1.03	505.59	481.92	0.50
HUB	5.75	1.08	5.32	514.80	1.03	503.84	481.73	0.53

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.77	35.14	31.50	3.64	0.93	0.50	1.40
MEAN	40.65	27.22	23.50	3.72	0.94	0.49	1.62
HUB	44.22	10.28	6.50	3.78	0.94	0.49	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.977	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	371.7591	226.6414	294.6837	1093.6849	0.3399	-0.1182	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
5.7790	5.3404	504.5042	482.1318	0.5205	37.5639	31.5000	-6.0639

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	290.4982	63.3702	283.5021	1098.3636	0.2645	0.2999	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	5.7759	5.5053	508.8310	482.0923	451.3937	0.0178	0.4249

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	295.3376	0.0000	295.3376	1098.1089	0.2690	0.3287	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.4846	508.6031	482.0636	0.0000	0.0600	0.0489	0.2478

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8582	5.7636	1.0859	515.6155	13.4660	197.5809	1.5316

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
83754.734	0.504	122.833	241473.031	0.889227E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.874 EfDer = 0.987 SH = 0.894743E-04

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
25.952	2357.013	5.764	515.615	1.000	1.000	0.980

W Kg/sec = 11.796 Wdry = 25.950 WH2O = 0.002 lbm/sec H2O = 0.042g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
65.994	2364.052	1.381	0.248	53.351	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
52925.926	20362.586	2.657	513.330	193.185	395.845	2.049

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	247.45	-0.09	247.45	0.22	0.42	397.33
MEAN	16.97	0.00	-0.02	247.45	-0.09	247.45	0.22	0.39	
HUB	14.32	0.00	-0.02	247.45	-0.09	247.45	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	58.02	46.36	11.66	396.16	467.16	5.57	510.69	482.05	0.43
MEAN	54.67	43.80	10.87	349.07	427.95	5.57	510.69	482.05	0.43
HUB	49.97	37.84	12.13	294.55	384.76	5.57	510.69	482.05	0.43

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	331.24	204.66	260.45	1109.89	0.30	2.16	1.89	8.34
MEAN	16.57	333.40	205.75	262.34	1108.16	0.30	2.24	1.97	6.35
HUB	13.89	355.62	237.83	264.39	1106.47	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	388.34	318.71	183.68	0.29	3865.57	0.92	0.90		
MEAN	340.90	295.11	135.15	0.27	3411.52	0.92	0.90	0.90	1.59
HUB	285.70	268.69	47.87	0.24	3304.71	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.25	1.08	5.88	528.40	1.02	519.58	488.24	0.33
MEAN	6.19	1.07	5.82	526.90	1.02	517.96	487.54	0.35
HUB	6.17	1.07	5.75	526.54	1.02	516.38	487.38	0.36

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	38.16	35.19	31.50	3.69	0.93	0.47	1.40
MEAN	38.11	27.26	23.50	3.76	0.94	0.46	1.62
HUB	41.97	10.26	6.50	3.76	0.94	0.46	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.987	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	354.3228	206.9072	287.6352	1107.3228	0.3200	-0.0940	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.1980	5.7788	517.1883	487.7130	0.3560	35.7289	32.4000	-3.3289

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	289.2795	64.8769	281.9106	1110.9178	0.2604	0.2591	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.1965     5.9148   520.5536   487.6884   432.2457     0.0138     0.4007

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   286.9389     0.0000   286.9389  1111.0256     0.2583     0.3116     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     5.9094   520.6620   487.6624     0.0000     0.0600     0.0404     0.2453

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8717     6.1862     1.0733   527.2805    11.6654   213.8976     1.6581

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  72564.570       0.481     106.422  247449.125   0.899011E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 9.319   EfDer =  0.994    SH =  0.905340E-04

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     25.952    2357.013       6.186     527.280       1.000       1.000       0.980
 W Kg/sec =  11.796  Wdry =  25.950  WH2O = 0.002  lbm/sec   H2O =   0.045g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.177    2337.756       1.381       0.248      53.351      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50292.934   20362.576       2.800     509.668     182.014     384.739       2.114

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   236.83    -0.08   236.83     0.21     0.40   373.73
 MEAN    15.91     0.00    -0.02   236.83    -0.08   236.83     0.21     0.36
 HUB     13.07     0.00    -0.02   236.83    -0.08   236.83     0.21     0.32

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.86    47.36    10.50   376.82   445.13     6.00   522.77   487.65     0.31
 MEAN    54.12    44.80     9.32   327.31   404.07     6.00   522.77   487.65     0.31
 HUB     48.63    38.84     9.79   268.83   358.33     6.00   522.77   487.65     0.31

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   314.81   191.60   249.79  1121.66      0.28     2.05     1.78     7.43
 MEAN    15.50   314.33   188.39   251.63  1119.88      0.28     2.13     1.86     5.75
 HUB     12.59   331.16   212.98   253.59  1118.12      0.30     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    369.00   306.38   177.41     0.27  3438.78      0.92     0.91
 MEAN   318.77   283.40   130.38     0.25  2920.87      0.92     0.91     0.91     1.58
 HUB    258.96   257.73    45.98     0.23  2682.47      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.64     1.07     6.29   538.65     1.02   530.69   492.88     0.24
 MEAN     6.57     1.06     6.22   536.94     1.02   529.00   492.11     0.26
 HUB      6.54     1.06     6.16   536.15     1.02   527.34   491.76     0.27

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     37.49    35.38    31.50     3.88     0.93     0.46     1.40
 MEAN    36.82    27.39    23.50     3.89     0.93     0.44     1.64
 HUB     40.03    10.28     6.50     3.78     0.93     0.43     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.994       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   344.6326   191.8428   286.3005  1118.4937     0.3081    -0.1754     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.5735     6.1599   527.7002   492.2439     0.2653    33.8251    33.0000    -0.8251
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   292.9548    66.8965   285.2146  1121.2964     0.2613     0.1368     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.5719     6.2712   530.3486   492.2256   410.5396     0.0243     0.3744

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   284.9840     0.0000   284.9840  1121.6807     0.2541     0.2972     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.2828   530.7189   492.2128     0.0000     0.0600     0.0368     0.1691

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8802     6.5674     1.0616   537.2468     9.9667   234.6093     1.8187

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  62005.621       0.455      90.936  259804.484   0.910077E-04

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1443   Tt4 =   537.2468   T1  =   469.5012

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    421359.56    617.9562     83.6858      1.5142      0.8409     15.2639      1.1443     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 34281 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =15.369   EfDer =  0.955    SH =  0.102769E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     27.788    2282.816       4.829     471.211       1.000       1.000       0.980
  W Kg/sec =  12.631  Wdry =  27.785  WH2O = 0.003  lbm/sec   H2O =   0.045g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.630    2395.083       1.381       0.248      53.352      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  61129.789   21802.723       3.523     831.557     236.027     619.754       2.626

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   176.43    -0.06   176.43     0.17     0.42   431.18
 MEAN    17.06     0.00    -0.02   176.43    -0.06   176.43     0.17     0.36
 HUB     12.51     0.00    -0.02   176.43    -0.06   176.43     0.17     0.29

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     66.77    50.47    16.30   410.98   447.30     4.74   468.71   457.95     2.35
 MEAN    62.57    47.20    15.37   339.86   382.98     4.74   468.71   457.95     2.35
 HUB     54.71    38.62    16.09   249.22   305.40     4.74   468.71   457.95     2.35

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   369.06   282.39   237.62  1065.63      0.35     7.29     6.52    16.04
 MEAN    18.04   373.66   286.13   240.32  1062.95      0.35     7.43     6.80    12.53
 HUB     15.00   404.72   322.85   244.06  1059.64      0.38     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    410.98   270.19   128.59     0.25  5826.89      0.92     0.87
 MEAN   359.30   251.21    73.17     0.24  5161.63      0.92     0.87     0.87     1.75
 HUB    298.82   245.24    24.03     0.23  4843.56      0.92     0.87

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP       5.46     1.13     5.03   489.88     1.04   478.93   469.69     1.61
 MEAN      5.39     1.12     4.95   487.75     1.04   476.52   468.44     1.76
 HUB       5.35     1.11     4.85   486.73     1.03   473.56   467.86     1.96

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP      49.92    28.42    24.20     4.22     0.93     0.57     1.80
 MEAN     49.97    16.93    12.70     4.23     0.95     0.52     2.22
 HUB      52.91    -5.62    -9.30     3.68     0.95     0.39     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.955       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   384.6222   285.5713   257.6496  1062.6173     0.3620    -0.0370     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     5.3957     4.9343   476.2226   468.6574     1.7807    47.9424    35.4000   -12.5424

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   257.0126    62.8731   249.2036  1069.9335     0.2402     0.5096     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     5.3853     5.1760   482.8064   468.5493   554.9116     0.0327     0.6003

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   255.8428     0.0000   255.8428  1069.9769     0.2391     0.4788     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.1552   482.8546   468.5031     0.0000     0.0600     0.0842     0.4641
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8175     5.3617     1.1104   488.1174    16.9074   168.5781     1.3068

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
 105147.555       0.623     165.114  284472.063   0.104731E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =14.685   EfDer =  0.961    SH =  0.106448E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     27.788    2282.816       5.362     488.117       1.000       1.000       0.980
 W Kg/sec =  12.631  Wdry =  27.785  WH2O = 0.003  lbm/sec   H2O =   0.049g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.904    2353.244       1.381       0.248      53.352      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  57588.621   21802.691       2.729     590.487     216.340     468.502       2.166

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   234.07    -0.08   234.07     0.22     0.44   422.00
 MEAN    18.08     0.00    -0.02   234.07    -0.08   234.07     0.22     0.40
 HUB     15.21     0.00    -0.02   234.07    -0.08   234.07     0.22     0.36

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     60.25    46.36    13.89   409.38   471.64     5.19   483.71   468.50     1.39
 MEAN    56.99    42.30    14.69   360.14   429.59     5.19   483.71   468.50     1.39
 HUB     52.32    37.84    14.48   303.00   382.94     5.19   483.71   468.50     1.39

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   340.12   232.70   248.05  1082.30      0.31     2.33     2.04     9.02
 MEAN    18.01   340.24   230.57   250.20  1080.19      0.31     2.40     2.13     7.35
 HUB     15.22   361.06   257.99   252.59  1078.11      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    406.79   303.05   174.09     0.28  4753.48      0.92     0.88
 MEAN   358.78   281.14   128.21     0.26  4154.05      0.92     0.88     0.88     1.68
 HUB    303.26   256.62    45.27     0.24  3928.61      0.92     0.88

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      5.91     1.10     5.53   503.34     1.03   494.04   477.17     0.97
 MEAN     5.84     1.09     5.46   501.42     1.03   492.12   476.13     1.04
 HUB      5.82     1.08     5.39   500.70     1.03   490.22   475.74     1.11

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     43.17    35.06    31.50     3.56     0.93     0.53     1.40
 MEAN    42.66    27.13    23.50     3.63     0.95     0.51     1.63
 HUB     45.61    10.16     6.50     3.66     0.95     0.50     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.961       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   364.2478   231.2194   281.4499  1079.1259     0.3375    -0.1099     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    5.8532     5.4148   491.1568   476.3511     1.0721    39.4041    30.6000    -8.8041

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   273.3020    57.9420   267.0893  1084.2334     0.2521     0.3531     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     5.8482     5.5986   495.8185   476.2899   491.5697     0.0223     0.4505

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   283.1005     0.0000   283.1005  1083.7460     0.2612     0.3442     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	5.5657	495.3802	476.2612	0.0000	0.0600	0.0618	0.2706

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8369	5.8325	1.0878	501.8235	13.7065	191.4977	1.4845

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
85252.148	0.515	133.872	259059.875	0.107034E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =12.470 EfDer = 0.977 SH = 0.107699E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.788	2282.816	5.832	501.823	1.000	1.000	0.980

W Kg/sec = 12.631 Wdry = 27.785 WH2O = 0.003 lbm/sec H2O = 0.053g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
68.886	2320.885	1.381	0.248	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
54451.648	21802.680	2.705	545.479	201.653	424.468	2.105

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	239.58	-0.08	239.58	0.22	0.43	406.48
MEAN	17.74	0.00	-0.02	239.58	-0.08	239.58	0.22	0.39	
HUB	15.05	0.00	-0.02	239.58	-0.08	239.58	0.22	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	59.07	46.36	12.71	399.82	466.18	5.64	497.21	476.25	0.88
MEAN	55.87	43.40	12.47	353.37	427.00	5.64	497.21	476.25	0.88
HUB	51.38	38.84	12.54	299.82	383.84	5.64	497.21	476.25	0.88

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	333.27	216.10	253.71	1095.96	0.30	2.26	1.98	8.75
MEAN	17.51	335.49	217.30	255.60	1094.18	0.31	2.34	2.07	6.78
HUB	14.85	358.45	249.15	257.70	1092.43	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	394.64	310.24	178.54	0.28	4282.56	0.92	0.89		
MEAN	348.75	287.43	131.45	0.26	3805.65	0.92	0.89	0.89	1.63
HUB	295.83	261.89	46.68	0.24	3701.14	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.37	1.09	5.98	515.54	1.03	506.61	483.51	0.65
MEAN	6.30	1.08	5.91	514.01	1.02	504.96	482.73	0.69
HUB	6.29	1.08	5.84	513.68	1.02	503.35	482.57	0.72

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	40.42	35.13	31.50	3.63	0.93	0.50	1.40
MEAN	40.37	27.22	23.50	3.72	0.94	0.48	1.62
HUB	44.03	10.27	6.50	3.77	0.94	0.48	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.977	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	360.9159	218.7269	287.0868	1093.0553	0.3302	-0.1192	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.3166	5.8630	503.9392	482.9372	0.7104	37.3032	31.5000	-5.8032

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	283.4351	61.8294	276.6090	1097.3983	0.2583	0.2939	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.3137	6.0312	507.9527	482.8940	451.3937	0.0170	0.4197

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	288.1008	0.0000	288.1008	1097.1586	0.2626	0.3239	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.0099	507.7384	482.8681	0.0000	0.0600	0.0479	0.2419

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8592	6.3010	1.0803	514.4106	12.5874	198.4762	1.5386

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
78299.961	0.503	122.955	258322.016	0.108213E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =10.666 EfDer = 0.988 SH = 0.108897E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.788	2282.816	6.301	514.411	1.000	1.000	0.980

W Kg/sec = 12.631 Wdry = 27.785 WH2O = 0.003 lbm/sec H2O = 0.056g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
64.559	2292.314	1.381	0.248	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
51656.309	21802.672	2.716	513.330	188.989	395.845	2.095

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	241.51	-0.08	241.51	0.22	0.41	385.27
MEAN	16.97	0.00	-0.02	241.51	-0.08	241.51	0.22	0.38	
HUB	14.32	0.00	-0.02	241.51	-0.08	241.51	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.82	46.36	11.46	383.68	453.44	6.10	509.72	482.85	0.60
MEAN	54.47	43.80	10.67	338.08	415.55	6.10	509.72	482.85	0.60
HUB	49.76	37.84	11.92	285.27	373.84	6.10	509.72	482.85	0.60

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	321.77	196.45	254.84	1108.16	0.29	2.16	1.89	8.34
MEAN	16.57	324.09	198.04	256.54	1106.56	0.29	2.24	1.97	6.35
HUB	13.89	345.92	229.97	258.40	1105.00	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	376.11	311.80	179.66	0.28	3710.62	0.92	0.90		
MEAN	330.17	288.57	132.13	0.26	3283.75	0.92	0.90	0.90	1.58
HUB	276.71	262.59	46.74	0.24	3195.50	0.92	0.90		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	6.79	1.08	6.41	526.29	1.02	517.97	488.78	0.47
MEAN	6.73	1.07	6.35	524.93	1.02	516.48	488.12	0.49
HUB	6.72	1.07	6.29	524.64	1.02	515.03	487.99	0.51

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	37.63	35.18	31.50	3.68	0.93	0.47	1.40
MEAN	37.67	27.25	23.50	3.75	0.94	0.45	1.62
HUB	41.67	10.25	6.50	3.75	0.94	0.45	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.988	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	344.6010	199.1569	281.2230	1105.7598	0.3116	-0.0952	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
6.7447	6.3110	515.7437	488.2916	0.4985	35.3054	32.4000	-2.9054

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	283.1825	63.5096	275.9690	1109.0757	0.2553	0.2499	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	6.7434	6.4483	518.8430	488.2644	432.2457	0.0132	0.3933

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	280.8683	0.0000	280.8683	1109.1807	0.2532	0.3043	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.4430	518.9479	488.2404	0.0000	0.0600	0.0395	0.2366

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8730	6.7329	1.0685	525.2886	10.8784	215.6528	1.6717

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
67676.977	0.478	106.274	265112.594	0.109460E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc = 9.019 EfDer = 0.995 SH = 0.110180E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
27.788	2282.816	6.733	525.288	1.000	1.000	0.980

W Kg/sec = 12.631 Wdry = 27.785 WH2O = 0.003 lbm/sec H2O = 0.060g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
61.054	2268.455	1.381	0.249	53.352	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
49249.992	21802.658	2.852	509.668	178.730	384.739	2.153

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	231.92	-0.08	231.92	0.21	0.39	362.65
MEAN	15.91	0.00	-0.02	231.92	-0.08	231.92	0.21	0.35	
HUB	13.07	0.00	-0.02	231.92	-0.08	231.92	0.21	0.31	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.57	47.36	10.21	364.96	432.48	6.53	520.97	488.23	0.43
MEAN	53.82	44.80	9.02	317.01	392.85	6.53	520.97	488.23	0.43
HUB	48.32	38.84	9.48	260.37	348.74	6.53	520.97	488.23	0.43

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	306.10	183.30	245.15	1119.12	0.27	2.05	1.78	7.43
MEAN	15.50	305.99	180.85	246.82	1117.47	0.27	2.13	1.86	5.75
HUB	12.59	322.68	205.72	248.61	1115.85	0.29	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	357.39	300.68	174.09	0.27	3289.81	0.92	0.91		
MEAN	308.73	277.98	127.88	0.25	2804.04	0.92	0.91	0.91	1.56
HUB	250.81	252.66	45.09	0.23	2591.01	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.19	1.07	6.83	535.82	1.02	528.29	493.23	0.35
MEAN	7.12	1.06	6.76	534.27	1.02	526.74	492.51	0.37
HUB	7.09	1.05	6.70	533.59	1.02	525.22	492.20	0.38

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.79	35.38	31.50	3.88	0.93	0.45	1.40
MEAN	36.23	27.39	23.50	3.89	0.93	0.43	1.64
HUB	39.61	10.28	6.50	3.78	0.93	0.42	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.995	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	335.7658	184.1680	280.7504	1116.1439	0.3008	-0.1777	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.1261	6.6980	525.4980	492.6394	0.3788	33.2643	33.0000	-0.2643

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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   287.5805    65.6693   279.9823  1118.7041     0.2571     0.1235     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.1248     6.8089   527.9120   492.6195   410.5396     0.0236     0.3652

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   279.7716     0.0000   279.7716  1119.0751     0.2500     0.2872     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.8210   528.2681   492.6065     0.0000     0.0600     0.0366     0.1560

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8808     7.1200     1.0575   534.5587     9.2706   237.3854     1.8402

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57680.750       0.452      90.577  278729.875   0.110727E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1344   Tt4 =   534.5587   T1  =   471.2105

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    394057.38    618.7915     80.6305      1.4745      0.8415     15.3693      1.1344     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 30029 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc =13.902   EfDer =  0.967    SH =  0.183652E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     31.679    2155.433       5.592     480.738       1.000       1.000       0.980
  W Kg/sec =  14.400  Wdry =  31.673  WH2O = 0.006  lbm/sec   H2O =   0.091g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     80.167    2238.917       1.381       0.249      53.354      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  61382.746   24855.117       3.543     831.557     234.686     619.754       2.641

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

          R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63      0.00    -0.02   177.16    -0.06   177.16     0.17     0.40   403.06
 MEAN    17.06      0.00    -0.02   177.16    -0.06   177.16     0.17     0.34
 HUB     12.51      0.00    -0.02   177.16    -0.06   177.16     0.17     0.28

        BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     65.46    50.47    14.99   388.04   426.63      5.49   478.21   465.12     3.21
 MEAN    61.10    47.20    13.90   320.90   366.60      5.49   478.21   465.12     3.21
 HUB     53.03    38.62    14.41   235.31   294.59      5.49   478.21   465.12     3.21

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

          R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   352.82   258.65   239.96  1074.40      0.33     7.29     6.52    16.04
 MEAN    18.04   359.69   265.85   242.28  1072.15      0.34     7.43     6.80    12.53
 HUB     15.00   392.85   306.61   245.60  1069.28      0.37     7.49     7.25     9.22

         U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    388.04   272.62   129.39     0.25  5337.23      0.92     0.88
 MEAN   339.25   253.15    73.40     0.24  4795.96      0.92     0.88     0.88     1.66
 HUB    282.15   246.82    24.47     0.23  4599.95      0.92     0.88

          Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.22     1.11     5.78   496.88     1.03   486.87   474.97     2.36
 MEAN     6.15     1.10     5.70   495.24     1.03   484.84   474.04     2.54
 HUB      6.13     1.10     5.59   494.65     1.03   482.24   473.75     2.77

          Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     47.15    28.33    24.20     4.13     0.93     0.53     1.80
 MEAN    47.66    16.85    12.70     4.15     0.95     0.48     2.22
 HUB     51.30    -5.69    -9.30     3.61     0.95     0.35     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.967       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   371.3263   265.3362   259.7691  1071.7784     0.3465    -0.0423     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     6.1616     5.6768   484.5049   474.2500     2.5673    45.6074    35.4000   -10.2074

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   260.4252    63.7079   252.5125  1077.9855     0.2416     0.4691     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     6.1540     5.9122   490.1364   474.1165   554.9116     0.0259     0.5581

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   258.9711     0.0000   258.9711  1078.0426     0.2402     0.4496     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     5.8947   490.1972   474.0780     0.0000     0.0600     0.0697     0.4325
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8352     6.1330     1.0967   495.5875    14.8503   175.7502     1.3624

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  92388.945       0.614     165.396  319397.375   0.186454E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc =12.841   EfDer =  0.975    SH =  0.189201E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.679    2155.433       6.133     495.587       1.000       1.000       0.980
 W Kg/sec =  14.400  Wdry =  31.673  WH2O = 0.006  lbm/sec   H2O =   0.099g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     74.219    2205.121       1.381       0.249      53.354      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  58290.199   24855.064       2.718     590.487     217.275     468.502       2.156

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   236.92    -0.08   236.92     0.22     0.42   395.44
 MEAN    18.08     0.00    -0.02   236.92    -0.08   236.92     0.22     0.38
 HUB     15.21     0.00    -0.02   236.92    -0.08   236.92     0.22     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     58.50    46.36    12.14   386.54   453.44     5.93   491.08   474.07     2.09
 MEAN    55.14    42.30    12.84   340.05   414.51     5.93   491.08   474.07     2.09
 HUB     50.38    37.84    12.54   286.10   371.52     5.93   491.08   474.07     2.09

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050      0.950       77.000

         R2      C2      Cu2       Cm2     Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   326.65   207.19   252.54  1088.56     0.30     2.33     2.04     9.02
 MEAN    18.01   328.99   208.68   254.33  1086.87     0.30     2.40     2.13     7.35
 HUB     15.22   351.57   240.61   256.33  1085.20     0.32     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    384.09   308.34   176.91     0.28  4232.42     0.92     0.89
 MEAN   338.76   285.67   130.08     0.26  3759.76     0.92     0.89     0.89     1.59
 HUB    286.34   260.38    45.73     0.24  3664.07     0.92     0.89

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      6.66     1.09     6.26   508.38     1.03   499.81   481.24     1.56
 MEAN     6.60     1.08     6.20   506.96     1.02   498.26   480.48     1.64
 HUB      6.59     1.07     6.13   506.67     1.02   496.73   480.35     1.73

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     39.37    35.01    31.50     3.51     0.93     0.48     1.40
 MEAN    39.37    27.09    23.50     3.59     0.94     0.47     1.63
 HUB     43.19    10.12     6.50     3.62     0.94     0.46     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.975       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   354.4995   209.2642   286.1441  1085.7434     0.3265    -0.1232     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    6.6120     6.1473   497.2352   480.7017     1.6963    36.1789    30.6000    -5.5789

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   279.0130    59.1527   272.6705  1089.9305     0.2560     0.2891     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     6.6093     6.3187   501.0785   480.6268   491.5697     0.0165     0.3970

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   288.8040     0.0000   288.8040  1089.4373     0.2651     0.2986     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.2860	500.6318	480.6100	0.0000	0.0600	0.0471	0.2112

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8565	6.5965	1.0756	507.3349	11.7477	204.1578	1.5826

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
73095.820	0.495	130.857	292062.000	0.190003E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =10.392 EfDer = 0.990 SH = 0.190897E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.679	2155.433	6.596	507.335	1.000	1.000	0.980

W Kg/sec = 14.400 Wdry = 31.673 WH2O = 0.006 lbm/sec H2O = 0.105g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
69.818	2179.442	1.381	0.249	53.354	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
55531.840	24855.047	2.669	545.479	204.393	424.468	2.077

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	244.33	-0.08	244.33	0.22	0.41	381.70
MEAN	17.74	0.00	-0.02	244.33	-0.08	244.33	0.22	0.38	
HUB	15.05	0.00	-0.02	244.33	-0.08	244.33	0.22	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	57.09	46.36	10.73	377.51	449.75	6.37	502.54	480.58	1.44
MEAN	53.79	43.40	10.39	333.66	413.62	6.37	502.54	480.58	1.44
HUB	49.21	38.84	10.37	283.09	374.01	6.37	502.54	480.58	1.44

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	322.00	189.59	260.28	1099.97	0.29	2.26	1.98	8.75
MEAN	17.51	326.28	194.72	261.81	1098.60	0.30	2.34	2.07	6.78
HUB	14.85	350.83	231.61	263.51	1097.26	0.32	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	372.62	318.19	183.03	0.29	3757.39	0.92	0.91		
MEAN	329.29	294.37	134.58	0.27	3410.33	0.92	0.91	0.91	1.53
HUB	279.32	267.80	47.72	0.24	3440.61	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.09	1.08	6.69	518.69	1.02	510.36	486.58	1.13
MEAN	7.05	1.07	6.63	517.65	1.02	509.09	486.05	1.17
HUB	7.05	1.07	6.58	517.74	1.02	507.85	486.12	1.22

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	36.07	35.12	31.50	3.62	0.93	0.44	1.40
MEAN	36.64	27.20	23.50	3.70	0.94	0.43	1.62
HUB	41.31	10.26	6.50	3.76	0.94	0.44	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.990	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	353.4573	195.9953	294.1393	1097.3971	0.3221	-0.1336	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.0599	6.5764	507.9857	486.2598	1.2112	33.6769	31.5000	-2.1769

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	291.5712	63.6043	284.5492	1100.8563	0.2649	0.2178	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.0585	6.7269	511.1935	486.2064	451.3937	0.0132	0.3613

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	296.2350	0.0000	296.2350	1100.6123	0.2692	0.2683	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.7061	510.9733	486.1886	0.0000	0.0600	0.0382	0.1696

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8743	7.0477	1.0684	518.0251	10.6905	213.8569	1.6578

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
66524.320	0.479	119.092	292316.750	0.191640E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 8.342 EfDer = 0.998 SH = 0.192507E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
31.679	2155.433	7.048	518.025	1.000	1.000	0.980

W Kg/sec = 14.400 Wdry = 31.673 WH2O = 0.006 lbm/sec H2O = 0.111g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
66.033	2156.837	1.381	0.249	53.355	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
53085.867	24855.033	2.655	513.330	193.315	395.845	2.048

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	248.20	-0.09	248.20	0.23	0.40	362.50
MEAN	16.97	0.00	-0.02	248.20	-0.09	248.20	0.23	0.37	
HUB	14.32	0.00	-0.02	248.20	-0.09	248.20	0.23	0.33	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	55.59	46.36	9.23	362.27	439.21	6.81	513.08	486.16	1.04
MEAN	52.14	43.80	8.34	319.21	404.42	6.81	513.08	486.16	1.04
HUB	47.35	37.84	9.51	269.35	366.33	6.81	513.08	486.16	1.04

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	313.13	169.30	263.42	1110.09	0.28	2.16	1.89	8.34
MEAN	16.57	317.52	175.29	264.75	1108.91	0.29	2.24	1.97	6.35
HUB	13.89	340.91	212.94	266.23	1107.75	0.31	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	355.13	322.37	185.83	0.29	3198.07	0.92	0.91		
MEAN	311.75	297.85	136.46	0.27	2906.61	0.92	0.91	0.91	1.48
HUB	261.27	270.58	48.33	0.24	2958.91	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.49	1.06	7.10	527.69	1.02	519.81	491.02	0.85
MEAN	7.45	1.06	7.04	526.81	1.02	518.71	490.59	0.88
HUB	7.46	1.06	6.99	526.97	1.02	517.63	490.69	0.91

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	32.73	35.20	31.50	3.70	0.93	0.40	1.40
MEAN	33.51	27.27	23.50	3.77	0.93	0.40	1.62
HUB	38.65	10.29	6.50	3.79	0.93	0.41	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.998	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	339.6500	176.2715	290.3282	1108.0208	0.3065	-0.1079	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.4633	6.9985	517.8882	490.7696	0.9036	31.2638	32.4000	1.1362

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	293.4555	65.8135	285.9803	1110.5311	0.2642	0.1652	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4624     7.1134   520.2381   490.7352   432.2457     0.0122     0.3304

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   290.9993     0.0000   290.9993  1110.6487     0.2620     0.2379     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.1091   520.3535   490.7127     0.0000     0.0600     0.0370     0.1550

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8793     7.4519     1.0573   527.1576     9.1328   235.2894     1.8239

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  56837.234       0.451     101.751  301030.781   0.193195E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc = 6.473   EfDer =  1.000    SH =  0.194071E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     31.679    2155.433       7.452     527.158       1.000       1.000       0.980
 W Kg/sec =  14.400  Wdry =  31.673  WH2O = 0.006  lbm/sec   H2O =   0.116g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     62.999    2138.072       1.381       0.249      53.355      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  50988.102   24855.018       2.763     509.668     184.438     384.739       2.086

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   240.10    -0.08   240.10     0.22     0.38   341.81
 MEAN    15.91     0.00    -0.02   240.10    -0.08   240.10     0.22     0.34
 HUB     13.07     0.00    -0.02   240.10    -0.08   240.10     0.22     0.31

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     55.14    47.36     7.78   344.59   420.06     7.22   522.53   490.69     0.80
 MEAN    51.27    44.80     6.47   299.32   383.78     7.22   522.53   490.69     0.80
 HUB     45.69    38.84     6.85   245.84   343.70     7.22   522.53   490.69     0.80

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   299.12   155.96   255.25  1119.23     0.27     2.05     1.78     7.43
 MEAN    15.50   301.49   158.33   256.57  1118.01     0.27     2.13     1.86     5.75
 HUB     12.59   320.26   189.76   257.99  1116.80     0.29     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    337.45   313.19   181.49     0.28  2799.43     0.92     0.91
 MEAN   291.51   289.07   133.18     0.26  2454.99     0.92     0.91     0.91     1.46
 HUB    236.81   262.25    47.06     0.23  2390.13     0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.86     1.05     7.48   535.62     1.02   528.43   494.77     0.67
 MEAN     7.81     1.05     7.43   534.58     1.01   527.27   494.28     0.69
 HUB      7.80     1.05     7.37   534.38     1.01   526.14   494.20     0.72

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.43    35.41    31.50     3.91     0.93     0.39     1.40
 MEAN    31.68    27.43    23.50     3.93     0.93     0.37     1.64
 HUB     36.34    10.34     6.50     3.84     0.93     0.37     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   333.5404   161.2290   291.9836  1116.5609     0.2987    -0.1965     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.8115     7.3485   525.9213   494.4188     0.7205    28.9068    33.0000     4.0932
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   300.2073    68.5526   292.2755  1118.3617     0.2684     0.0176     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.8087     7.4322   527.6185   494.3918   410.5396     0.0271     0.2993

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   292.0342     0.0000   292.0342  1118.7695     0.2610     0.2113     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.4463   528.0074   494.3752     0.0000     0.0600     0.0423     0.0536

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8740     7.8027     1.0471   534.8594     7.7021   262.0067     2.0311

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  47937.957       0.421      85.819  317406.688   0.194713E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.1126   Tt4 =   534.8594   T1  =   480.7375

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    336784.28    602.9142     80.1669      1.3953      0.8549     13.9025      1.1126     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
***************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 25666 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 9.157   EfDer =  0.995    SH =  0.315676E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     39.693    1971.414       6.513     491.412       1.000       1.000       0.980
  W Kg/sec =  18.042  Wdry =  39.681  WH2O = 0.013  lbm/sec   H2O =   0.178g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     87.203    2025.409       1.381       0.249      53.359      32.000       0.050

    CFM       SCFM           A1/A*      Area1        A*        AthrRotor  ChokeMargin
  67690.359   31141.309       3.257     831.557     255.309     619.754       2.427

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   195.36    -0.07   195.36     0.18     0.38   364.63
 MEAN    17.06     0.00    -0.02   195.36    -0.07   195.36     0.18     0.33
 HUB     12.51     0.00    -0.02   195.36    -0.07   195.36     0.18     0.27

       BetaFlo   BetaBlade Incid   U1        W1         Ps1    Ts1     TwetBulb1  RH
 TIP     61.17    50.47    10.70   354.92   405.19      6.37   488.35   472.94     4.18
 MEAN    56.36    47.20     9.16   293.50   352.63      6.37   488.35   472.94     4.18
 HUB     47.78    38.62     9.16   215.22   290.72      6.37   488.35   472.94     4.18

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   340.73   211.21   267.37  1082.33      0.31     7.29     6.52    16.04
 MEAN    18.04   353.46   229.10   269.16  1080.87      0.33     7.43     6.80    12.53
 HUB     15.00   394.41   285.42   272.19  1078.62      0.37     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    354.92   303.54   143.71     0.28  4358.58      0.92     0.91
 MEAN   310.29   281.14    81.19     0.26  4133.17      0.92     0.91     0.91     1.42
 HUB    258.06   273.57    27.37     0.25  4282.20      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.06     1.08     6.59   503.46     1.02   494.13   480.12     3.44
 MEAN     7.03     1.08     6.53   502.84     1.02   492.80   479.80     3.60
 HUB      7.05     1.08     6.43   503.25     1.02   490.75   480.12     3.85

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     38.31    28.26    24.20     4.06     0.93     0.40     1.80
 MEAN    40.40    16.79    12.70     4.09     0.93     0.35     2.22
 HUB     46.36    -5.74    -9.30     3.56     0.93     0.23     3.05


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.995       1.812      33.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3         Cu3        Cm3         Ao3          Mach3      cp 2-3   Stat Ax Chd
   18.0711   368.3945   228.6532   288.8463  1080.2924     0.3410    -0.0596     5.2355

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.0373     6.5000   492.2796   480.0137     3.6625    38.3654    35.4000    -2.9654

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   18.0711   291.8607    71.3980   282.9929  1084.7347     0.2691     0.3352     5.4957

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.0349     6.6942   496.3392   479.8731   554.9116     0.0145     0.4354

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   18.0829   289.7263     0.0000   289.7263  1084.8362     0.2671     0.3472     1.3089

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     6.6865   496.4390   479.8489     0.0000     0.0600     0.0396     0.3205
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    STAGE EXIT CONDITIONS, STAGE             1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8757     7.0217     1.0782   503.1821    11.7699   200.8754     1.5572

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  73263.953       0.582     164.338  394696.438   0.318897E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 7.303   EfDer =  1.000    SH =  0.321853E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     39.693    1971.414       7.022     503.182       1.000       1.000       0.980
 W Kg/sec =  18.042  Wdry =  39.680  WH2O = 0.013  lbm/sec   H2O =   0.189g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     81.845    2001.582       1.381       0.249      53.359      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  65135.910   31141.232       2.464     590.487     239.624     468.502       1.955

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   264.74    -0.09   264.74     0.24     0.41   358.94
 MEAN    18.08     0.00    -0.02   264.74    -0.09   264.74     0.24     0.38
 HUB     15.21     0.00    -0.02   264.74    -0.09   264.74     0.24     0.34

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     53.18    46.36     6.82   353.54   441.75     6.74   497.55   479.82     3.12
 MEAN    49.60    42.30     7.30   311.02   408.50     6.74   497.55   479.82     3.12
 HUB     44.68    37.84     6.84   261.67   372.30     6.74   497.55   479.82     3.12

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   322.95   151.21   285.36  1092.35      0.30     2.33     2.04     9.02
 MEAN    18.01   329.61   163.10   286.43  1091.52      0.30     2.40     2.13     7.35
 HUB     15.22   356.33   210.26   287.68  1090.71      0.33     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    351.30   348.53   200.09     0.32  3089.53      0.92     0.91
 MEAN   309.84   321.84   146.74     0.29  2939.00      0.92     0.91     0.91     1.38
 HUB    261.89   292.27    51.63     0.27  3202.23      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      7.42     1.06     6.99   511.72     1.02   503.34   484.57     2.59
 MEAN     7.40     1.05     6.96   511.31     1.02   502.58   484.36     2.65
 HUB      7.44     1.06     6.92   512.03     1.02   501.83   484.80     2.71

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     27.92    35.04    31.50     3.54     0.93     0.33     1.40
 MEAN    29.66    27.13    23.50     3.63     0.93     0.33     1.63
 HUB     36.16    10.17     6.50     3.67     0.93     0.36     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       1.000       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   361.9558   163.5539   322.8964  1089.9751     0.3321    -0.1640     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    7.4186     6.8802   501.1627   484.6134     2.7686    26.8632    30.6000     3.7368

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   317.1631    67.2408   309.9534  1092.6304     0.2903     0.0959     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     7.4164     7.0005   503.6061   484.5348   491.5697     0.0147     0.2547

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   328.4410     0.0000   328.4410  1091.9910     0.3008     0.1471     0.5911
```

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	6.9594	503.0214	484.5302	0.0000	0.0600	0.0414	0.0079

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8713	7.4040	1.0544	511.6864	8.5044	251.4100	1.9489

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
52943.348	0.429	118.757	363837.750	0.322693E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc = 4.378 EfDer = 0.994 SH = 0.323573E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.693	1971.414	7.404	511.686	1.000	1.000	0.980

W Kg/sec = 18.042 Wdry = 39.680 WH2O = 0.013 lbm/sec H2O = 0.196g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
78.273	1984.879	1.381	0.249	53.359	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
62960.801	31141.213	2.380	545.479	229.169	424.468	1.852

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	277.02	-0.10	277.02	0.25	0.40	347.63
MEAN	17.74	0.00	-0.02	277.02	-0.10	277.02	0.25	0.38	
HUB	15.05	0.00	-0.02	277.02	-0.10	277.02	0.25	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	51.27	46.36	4.91	345.28	442.74	7.09	505.52	484.46	2.42
MEAN	47.78	43.40	4.38	305.17	412.22	7.09	505.52	484.46	2.42
HUB	43.08	38.84	4.24	258.92	379.24	7.09	505.52	484.46	2.42

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	325.91	129.79	298.95	1099.82	0.30	2.26	1.98	8.75
MEAN	17.51	333.47	146.42	299.60	1099.37	0.30	2.34	2.07	6.78
HUB	14.85	361.13	200.38	300.44	1098.93	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	340.81	365.93	211.02	0.33	2573.05	0.92	0.91		
MEAN	301.18	337.21	154.76	0.31	2565.01	0.92	0.91	0.91	1.32
HUB	255.48	305.45	55.09	0.28	2977.12	0.92	0.91		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	7.75	1.05	7.30	518.80	1.01	510.27	488.25	2.09
MEAN	7.75	1.05	7.28	518.78	1.01	509.84	488.25	2.12
HUB	7.80	1.05	7.25	519.91	1.02	509.44	488.88	2.14

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	23.47	35.22	31.50	3.72	0.93	0.28	1.40
MEAN	26.05	27.32	23.50	3.82	0.92	0.29	1.62
HUB	33.70	10.39	6.50	3.89	0.92	0.33	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.994	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	368.1973	147.3811	337.4138	1097.6655	0.3354	-0.1767	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
7.7622	7.1880	508.2733	488.4970	2.2181	23.5955	31.5000	7.9045

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	337.1264	73.5419	329.0073	1099.5669	0.3066	0.0000	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	7.7570	7.2738	510.0334	488.4377	451.3937	0.0205	0.2125

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	342.9689	0.0000	342.9689	1099.2192	0.3120	0.0913	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	7.2404	509.7144	488.4139	0.0000	0.0600	0.0571	-0.0676

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.8404	7.7390	1.0452	519.1622	7.4761	272.2463	2.1104

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
46544.914	0.401	104.405	366478.500	0.324376E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc = 1.779 EfDer = 0.974 SH = 0.325202E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
39.693	1971.414	7.739	519.162	1.000	1.000	0.980

W Kg/sec = 18.042 Wdry = 39.680 WH2O = 0.013 lbm/sec H2O = 0.203g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
75.430	1970.536	1.381	0.249	53.359	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
61217.633	31141.193	2.324	513.330	220.846	395.845	1.792

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	286.21	-0.10	286.21	0.26	0.40	331.19
MEAN	16.97	0.00	-0.02	286.21	-0.10	286.21	0.26	0.37	
HUB	14.32	0.00	-0.02	286.21	-0.10	286.21	0.26	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	49.19	46.36	2.83	331.35	437.92	7.39	512.58	488.34	1.95
MEAN	45.58	43.80	1.78	291.96	408.92	7.39	512.58	488.34	1.95
HUB	40.73	37.84	2.89	246.36	377.70	7.39	512.58	488.34	1.95

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	325.94	106.23	308.14	1106.16	0.29	2.16	1.89	8.34
MEAN	16.57	332.82	124.97	308.47	1105.96	0.30	2.24	1.97	6.35
HUB	13.89	358.57	181.85	309.03	1105.78	0.32	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	324.81	377.79	218.57	0.34	2007.59	0.92	0.89		
MEAN	285.13	347.57	160.17	0.31	2072.88	0.92	0.89	0.89	1.26
HUB	238.96	314.26	57.11	0.28	2527.36	0.92	0.89		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.01	1.03	7.55	524.71	1.01	516.18	491.19	1.75
MEAN	8.02	1.04	7.54	524.89	1.01	515.99	491.29	1.76
HUB	8.08	1.04	7.52	526.15	1.01	515.82	491.95	1.77

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	19.02	35.35	31.50	3.85	0.93	0.22	1.40
MEAN	22.05	27.44	23.50	3.94	0.91	0.24	1.62
HUB	30.48	10.47	6.50	3.97	0.91	0.29	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.974	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	361.5842	125.6707	339.0428	1104.6222	0.3273	-0.1443	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.0312	7.4641	514.7484	491.4971	1.8224	20.3379	32.4000	12.0621

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	345.5403	77.4946	336.7383	1105.6017	0.3125	-0.0622	2.2705

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   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.0219     7.5035   515.6594   491.4562   432.2457     0.0285     0.1760

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   16.0960   343.2746     0.0000   343.2746  1105.7341     0.3104     0.0375     0.5451

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.4853   515.7848   491.4044     0.0000     0.0600     0.0811    -0.0983

    STAGE EXIT CONDITIONS, STAGE             4
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.7706     7.9955     1.0332   525.2490     6.0870   313.1828     2.4278

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  37899.063       0.359      85.011  379731.969   0.325959E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   5
  BLEED =  0.000   DPInc =-0.629   EfDer =  0.940    SH =  0.326795E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     39.693    1971.414       7.996     525.249       1.000       1.000       0.980
 W Kg/sec =  18.042  Wdry =  39.680  WH2O = 0.013  lbm/sec   H2O =   0.209g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     73.436    1959.085       1.381       0.249      53.359      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  59865.035   31141.176       2.370     509.668     215.011     384.739       1.789

ROTOR LEADING EDGE CONDITIONS, STAGE   5

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     18.32     0.00    -0.02   281.90    -0.10   281.90     0.25     0.38   313.19
 MEAN    15.91     0.00    -0.02   281.90    -0.10   281.90     0.25     0.35
 HUB     13.07     0.00    -0.02   281.90    -0.10   281.90     0.25     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     48.20    47.36     0.84   315.17   422.92     7.65   518.87   491.33     1.62
 MEAN    44.17    44.80    -0.63   273.76   393.02     7.65   518.87   491.33     1.62
 HUB     38.59    38.84    -0.25   224.85   360.65     7.65   518.87   491.33     1.62

ROTOR EXIT CONDITIONS, STAGE   5    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
      0.500       0.050       0.950      77.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     17.94   317.41    90.75   304.16  1112.01     0.29     2.05     1.78     7.43
 MEAN    15.50   322.77   107.11   304.48  1111.81     0.29     2.13     1.86     5.75
 HUB     12.59   344.32   159.71   305.04  1111.61     0.31     2.14     1.98     3.85

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    308.64   374.15   217.88     0.34  1629.90     0.92     0.86
 MEAN   266.62   343.73   159.51     0.31  1661.46     0.92     0.86     0.86     1.23
 HUB    216.60   310.30    56.89     0.28  2011.96     0.92     0.86

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.21     1.03     7.77   529.75     1.01   521.66   493.57     1.49
 MEAN     8.22     1.03     7.75   529.84     1.01   521.47   493.61     1.49
 HUB      8.26     1.03     7.74   530.81     1.01   521.29   494.11     1.50

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     16.61    35.62    31.50     4.12     0.93     0.19     1.40
 MEAN    19.38    27.65    23.50     4.15     0.90     0.21     1.64
 HUB     27.63    10.56     6.50     4.06     0.90     0.25     2.01


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.940       0.495      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   15.2185   364.4805   109.0721   347.7776  1109.6598     0.3285    -0.2489     2.0437

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.2203     7.6361   519.4648   493.7935     1.5808    17.4128    33.0000    15.5872
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    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   361.2628    82.4947   351.7179  1109.8644     0.3255    -0.2733     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.1948     7.6223   519.6521   493.7408   410.5396     0.0736     0.1439

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   351.4767     0.0000   351.4767  1110.4623     0.3165     0.0039     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     7.6383   520.2122   493.6998     0.0000     0.0600     0.1045    -0.2396

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.6784     8.1800     1.0231   530.1336     4.8849   365.2444     2.8314

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  30416.695       0.319      68.227  402388.938   0.327615E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0788   Tt4 =   530.1336   T1  =   491.4125

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    241067.97    540.7379     87.2027      1.2560      0.8233      9.1568      1.0788     37.3740
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**********************************************************************
*************** AXIAL & CENTRIFUGAL COMPRESSOR BLADE DESIGN 1-D ****
********************    COMDES Version 19.0 ************************
****************   with Stator Vane, Gasplus Prop  ******************
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       Fan Core + 4 Stage LPC 10% 20047 ft 05-13-2013

 COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   1
   BLEED =  0.000   DPInc = 5.575   EfDer =  0.999    SH =  0.594204E-03

    W act      RPM act        Pt         Tt           POTS        POTH       AeroBl
     48.728    1793.769       7.939     506.410       1.000       1.000       0.980
  W Kg/sec =  22.149  Wdry =  48.699  WH2O = 0.029  lbm/sec   H2O =   0.397g/m^3

    W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     89.149    1815.407       1.380       0.249      53.368      32.000       0.050

    CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  70315.680   38225.246       3.185     831.557     261.060     619.754       2.374

 ROTOR LEADING EDGE CONDITIONS, STAGE   1

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.63     0.00    -0.02   202.94    -0.07   202.94     0.19     0.35   326.82
 MEAN    17.06     0.00    -0.02   202.94    -0.07   202.94     0.19     0.31
 HUB     12.51     0.00    -0.02   202.94    -0.07   202.94     0.19     0.26

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     57.86    50.47     7.39   322.93   381.47     7.75   503.10   483.57     5.34
 MEAN    52.77    47.20     5.57   267.05   335.47     7.75   503.10   483.57     5.34
 HUB     43.99    38.62     5.37   195.83   282.06     7.75   503.10   483.57     5.34

 ROTOR EXIT CONDITIONS, STAGE   1    SOLUTION IS CONVERGED
     B2 axial      THK       AeroBl      Blades2
       0.700       0.050       0.950      32.000

         R2      C2      Cu2       Cm2     Ao2         Mach2    Chord  AxChord  Rcircle
 TIP     20.63   329.04   171.86   280.58  1095.84      0.30     7.29     6.52    16.04
 MEAN    18.04   343.81   197.08   281.72  1095.00      0.31     7.43     6.80    12.53
 HUB     15.00   387.32   263.15   284.19  1093.30      0.35     7.49     7.25     9.22

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    322.93   318.67   151.07     0.29  3547.00      0.92     0.91
 MEAN   282.33   294.33    85.24     0.27  3555.82      0.92     0.91     0.91     1.27
 HUB    234.80   285.60    28.35     0.26  3948.15      0.92     0.91

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.41     1.06     7.91   515.32     1.02   506.63   488.69     4.78
 MEAN     8.41     1.06     7.86   515.34     1.02   505.86   488.74     4.89
 HUB      8.47     1.07     7.77   516.33     1.02   504.29   489.41     5.13

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     31.49    28.30    24.20     4.10     0.93     0.29     1.80
 MEAN    34.98    16.83    12.70     4.13     0.92     0.26     2.22
 HUB     42.80    -5.70    -9.30     3.60     0.92     0.15     3.05


    blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
       0.950       1.000       0.999       1.812      33.000

     ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
     R3m       C3        Cu3       Cm3        Ao3          Mach3      cp 2-3   Stat Ax Chd
    18.0711   360.7960   196.7020   302.4601  1094.3040     0.3297    -0.0736     5.2355

     Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
     8.4249     7.8219   505.2181   488.9590     4.9907    33.0376    35.4000     2.3624

     STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
    RCG       Cth       Cuth      Cmth      Aoth         Machth     cp 2-Th     Stat Chord
    18.0711   307.6680    75.2650   298.3199  1097.3843     0.2804     0.2279     5.4957

    BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
     0.9500     8.4228     7.9812   508.0682   488.8027   554.9116     0.0136     0.3486

     VANED DIFFUSER EXIT:
    R4        C4          Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
    18.0829   305.3533     0.0000   305.3533  1097.5015     0.2782     0.2522     1.3089

    Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
     0.9500     7.9740   508.1822   488.7753     0.0000     0.0600     0.0385     0.2154
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    STAGE EXIT CONDITIONS, STAGE            1
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.8729     8.4083     1.0591   515.6645     9.2549   222.9111     1.7280

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  57670.254       0.553     158.803  474177.094   0.598192E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE   2
  BLEED =  0.000   DPInc = 3.130   EfDer =  0.987    SH =  0.601533E-03

   W act      RPM act        Pt         Tt            POTS        POTH       AeroBl
     48.728    1793.769       8.408     515.664       1.000       1.000       0.980
 W Kg/sec =  22.149  Wdry =  48.698  WH2O = 0.029  lbm/sec   H2O =   0.411g/m^3

   W cor      RPM cor        GAMMA       Cp          R           Blades       THK
     84.939    1799.041       1.380       0.249      53.368      77.000       0.050

   CFM       SCFM            A1/A*      Area1        A*        AthrRotor  ChokeMargin
  68612.461   38225.133       2.374     590.487     248.734     468.502       1.884

ROTOR LEADING EDGE CONDITIONS, STAGE   2

         R1      Stator    Alfa     C1      CU1       Cm1       Mabs     Mrel   U1cor
 TIP     20.55     0.00    -0.02   278.87    -0.10   278.87     0.25     0.39   322.62
 MEAN    18.08     0.00    -0.02   278.87    -0.10   278.87     0.25     0.36
 HUB     15.21     0.00    -0.02   278.87    -0.10   278.87     0.25     0.33

       BetaFlo   BetaBlade Incid   U1       W1         Ps1    Ts1     TwetBulb1  RH
 TIP     49.09    46.36     2.73   321.68   425.80     8.04   509.42   488.72     4.41
 MEAN    45.43    42.30     3.13   282.99   397.37     8.04   509.42   488.72     4.41
 HUB     40.50    37.84     2.66   238.09   366.75     8.04   509.42   488.72     4.41

ROTOR EXIT CONDITIONS, STAGE   2    SOLUTION IS CONVERGED
    B2 axial      THK       AeroBl      Blades2
       0.500      0.050       0.950      77.000

         R2      C2       Cu2       Cm2      Ao2          Mach2    Chord  AxChord  Rcircle
 TIP     20.42   321.97   105.71   304.12  1102.45     0.29     2.33     2.04     9.02
 MEAN    18.01   329.16   125.33   304.37  1102.31     0.30     2.40     2.13     7.35
 HUB     15.22   355.52   182.95   304.83  1102.17     0.32     2.45     2.27     4.53

        U2       W2       Wu2     MachRel2  DelRCu     Eff2uC  Eff2incC  AvgREff  Ws1/W2
 TIP    319.65   371.83   213.93     0.34  2160.62     0.92     0.90
 MEAN   281.92   342.29   156.59     0.31  2258.94     0.92     0.90     0.90     1.25
 HUB    238.29   309.82    55.34     0.28  2786.51     0.92     0.90

         Pt2       PR      Ps2     Tt2       TR      Ts2     TwetBulb2   RH
 TIP      8.70     1.03     8.21   521.09     1.01   512.77   491.65     3.98
 MEAN     8.72     1.04     8.20   521.34     1.01   512.64   491.79     4.00
 HUB      8.79     1.05     8.19   522.66     1.01   512.52   492.54     4.01

         Alfa2  Beta FLO Beta BLADE  Deviat   Slip F. DiffFct   Solidity
 TIP     19.17    35.12    31.50     3.62     0.93     0.22     1.40
 MEAN    22.38    27.22    23.50     3.72     0.91     0.24     1.63
 HUB     30.97    10.29     6.50     3.79     0.91     0.28     1.97


   blockage3   Cor/U1    Cor/Incid     XBladeGap  Vane#
      0.950       1.000       0.987       0.567      73.000

    ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE
    R3m       C3        Cu3       Cm3       Ao3          Mach3      cp 2-3   Stat Ax Chd
   17.9595   365.8097   125.6826   343.5413  1100.4889     0.3324    -0.1938     2.3644

    Pt3        Ps3       Ts3       TwetBulb3   RH3     FloAlpha3   VaneAlpha3    Incid3
    8.7298     8.0952   510.9611   492.0714     4.2000    20.0948    30.6000    10.5052

    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   17.9595   339.3846    71.9520   331.6698  1102.1013     0.3079    -0.0444     2.4513

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     8.7215     8.1737   512.4562   491.9808   491.5697     0.0254     0.1608

    VANED DIFFUSER EXIT:
   R4        C4         Cu4       Cm4       Ao4          Mach4      cp 3-4   Stator Gap
   17.8235   352.0559     0.0000   352.0559  1101.3420     0.3197     0.0234     0.5911
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Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.1101	511.7533	491.9761	0.0000	0.0600	0.0714	-0.1628

STAGE EXIT CONDITIONS, STAGE 2

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.7981	8.6968	1.0343	521.6989	6.0344	303.4442	2.3523

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
37605.926	0.368	103.553	439695.031	0.602622E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 3
BLEED = 0.000 DPInc =-0.258 EfDer = 0.946 SH = 0.603804E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
48.728	1793.769	8.697	521.699	1.000	1.000	0.980

W Kg/sec = 22.149 Wdry = 48.698 WH2O = 0.029 lbm/sec H2O = 0.421g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
82.601	1788.606	1.380	0.249	53.368	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
67365.469	38225.102	2.255	545.479	241.888	424.468	1.755

ROTOR LEADING EDGE CONDITIONS, STAGE 3

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	20.07	0.00	-0.02	296.39	-0.10	296.39	0.27	0.39	313.25
MEAN	17.74	0.00	-0.02	296.39	-0.10	296.39	0.27	0.37	
HUB	15.05	0.00	-0.02	296.39	-0.10	296.39	0.27	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	46.68	46.36	0.32	314.17	431.99	8.28	514.65	491.84	3.76
MEAN	43.14	43.40	-0.26	277.67	406.21	8.28	514.65	491.84	3.76
HUB	38.49	38.84	-0.35	235.59	378.68	8.28	514.65	491.84	3.76

ROTOR EXIT CONDITIONS, STAGE 3 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	19.81	333.88	80.38	324.06	1106.71	0.30	2.26	1.98	8.75
MEAN	17.51	340.63	105.82	323.78	1107.02	0.31	2.34	2.07	6.78
HUB	14.85	366.76	172.18	323.83	1107.32	0.33	2.38	2.20	4.28

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	310.10	397.22	229.72	0.36	1594.31	0.92	0.87		
MEAN	274.04	364.87	168.22	0.33	1854.28	0.92	0.87	0.87	1.19
HUB	232.46	329.40	60.28	0.30	2558.39	0.92	0.87		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	8.91	1.02	8.37	525.70	1.01	516.76	493.94	3.53
MEAN	8.94	1.03	8.38	526.36	1.01	517.05	494.28	3.49
HUB	9.04	1.04	8.39	528.13	1.01	517.33	495.22	3.46

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	13.93	35.33	31.50	3.83	0.93	0.15	1.40
MEAN	18.10	27.45	23.50	3.95	0.90	0.18	1.62
HUB	28.00	10.54	6.50	4.04	0.90	0.25	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.946	0.550	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
17.3924	380.5377	106.5103	365.3279	1104.9381	0.3444	-0.2082	2.2836

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
8.9574	8.2608	515.1096	494.5651	3.6945	16.2539	31.5000	15.2461

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
17.3924	367.2710	80.1177	358.4260	1105.7963	0.3321	-0.1494	2.3726

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	8.9412	8.2922	515.9054	494.4981	451.3937	0.0377	0.1164

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
17.1214	374.5553	0.0000	374.5553	1105.3300	0.3389	-0.0412	0.5709

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.2321	515.4718	494.4566	0.0000	0.0600	0.1022	-0.2523

STAGE EXIT CONDITIONS, STAGE 3

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.6735	8.9035	1.0238	526.7288	5.0300	344.6506	2.6717

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
31348.182	0.326	86.322	445256.500	0.604816E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 4
BLEED = 0.000 DPInc =-3.347 EfDer = 0.887 SH = 0.605915E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
48.728	1793.769	8.904	526.729	1.000	1.000	0.980

W Kg/sec = 22.149 Wdry = 48.698 WH2O = 0.030 lbm/sec H2O = 0.427g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
81.071	1780.045	1.380	0.249	53.368	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
66664.461	38225.070	2.162	513.330	237.410	395.845	1.667

ROTOR LEADING EDGE CONDITIONS, STAGE 4

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	19.26	0.00	-0.02	311.68	-0.11	311.68	0.28	0.39	299.17
MEAN	16.97	0.00	-0.02	311.68	-0.11	311.68	0.28	0.37	
HUB	14.32	0.00	-0.02	311.68	-0.11	311.68	0.28	0.35	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	44.06	46.36	-2.30	301.49	433.71	8.43	518.93	494.30	3.29
MEAN	40.45	43.80	-3.35	265.65	409.60	8.43	518.93	494.30	3.29
HUB	35.74	37.84	-2.10	224.16	383.98	8.43	518.93	494.30	3.29

ROTOR EXIT CONDITIONS, STAGE 4 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	18.88	344.18	53.13	340.05	1109.90	0.31	2.16	1.89	8.34
MEAN	16.57	349.16	82.06	339.38	1110.56	0.31	2.24	1.97	6.35
HUB	13.89	372.42	153.75	339.20	1111.20	0.34	2.26	2.10	4.19

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	295.54	417.61	242.41	0.38	1005.10	0.92	0.81		
MEAN	259.44	382.94	177.38	0.34	1361.81	0.92	0.81	0.81	1.14
HUB	217.43	345.12	63.67	0.31	2137.19	0.92	0.81		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.03	1.01	8.46	529.25	1.00	519.75	495.60	3.21
MEAN	9.07	1.02	8.48	530.15	1.01	520.37	496.04	3.15
HUB	9.17	1.03	8.50	532.10	1.01	520.97	497.03	3.09

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	8.88	35.48	31.50	3.98	0.93	0.08	1.40
MEAN	13.59	27.59	23.50	4.09	0.89	0.13	1.62
HUB	24.38	10.63	6.50	4.13	0.89	0.20	1.94

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.887	0.524	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
16.4812	382.8065	82.5174	373.8070	1108.8212	0.3452	-0.1708	2.1803

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.0866	8.3768	518.7424	496.2909	3.2978	12.4483	32.4000	19.9517

STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:

RCG	Cth	Cuth	Cmth	Aoth	Machth	cp 2-Th	Stat Chord
16.4812	383.3687	85.9784	373.6031	1108.7888	0.3458	-0.2029	2.2705

BlockageTh	PtTh	PsTh	TsTh	TwetBulbTh	AreaTh	w2-Th	DiffFact4
0.9500	9.0629	8.3529	518.7076	496.2522	432.2457	0.0485	0.0804

VANED DIFFUSER EXIT:

R4	C4	Cu4	Cm4	Ao4	Mach4	cp 3-4	Stator Gap
16.0960	381.7982	0.0000	381.7982	1108.8925	0.3443	-0.0917	0.5451

Blockage4	Ps4	Ts4	TwetBulb4	VaneAlpha4	Vane Thk4	w2-4OD	cp 2-4
0.9500	8.3117	518.8039	496.1608	0.0000	0.0600	0.1311	-0.2699

STAGE EXIT CONDITIONS, STAGE 4

Eff4	Pt4	PR4	Tt2avg	Del T	Ns	Ns nondim
0.4675	9.0121	1.0122	530.5002	3.7714	425.4954	3.2984

Del Enthalpy	Del_H/U^2	GHP	Reynolds#	SH
23505.115	0.269	64.725	463875.813	0.606896E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00

COMPRESSOR INLET CONDITIONS - ANALYSIS, STAGE 5
BLEED = 0.000 DPInc =-6.213 EfDer = 0.824 SH = 0.608025E-03

W act	RPM act	Pt	Tt	POTS	POTH	AeroBl
48.728	1793.769	9.012	530.500	1.000	1.000	0.980

W Kg/sec = 22.149 Wdry = 48.698 WH2O = 0.030 lbm/sec H2O = 0.430g/m^3

W cor	RPM cor	GAMMA	Cp	R	Blades	THK
80.380	1773.707	1.380	0.249	53.368	77.000	0.050

CFM	SCFM	A1/A*	Area1	A*	AthrRotor	ChokeMargin
66324.656	38225.035	2.165	509.668	235.388	384.739	1.634

ROTOR LEADING EDGE CONDITIONS, STAGE 5

	R1	Stator	Alfa	C1	CU1	Cm1	Mabs	Mrel	U1cor
TIP	18.32	0.00	-0.02	312.32	-0.11	312.32	0.28	0.38	283.56
MEAN	15.91	0.00	-0.02	312.32	-0.11	312.32	0.28	0.36	
HUB	13.07	0.00	-0.02	312.32	-0.11	312.32	0.28	0.34	

	BetaFlo	BetaBlade	Incid	U1	W1	Ps1	Ts1	TwetBulb1	RH
TIP	42.57	47.36	-4.79	286.77	424.08	8.54	522.67	495.99	2.93
MEAN	38.59	44.80	-6.21	249.10	399.56	8.54	522.67	495.99	2.93
HUB	33.24	38.84	-5.60	204.59	373.42	8.54	522.67	495.99	2.93

ROTOR EXIT CONDITIONS, STAGE 5 SOLUTION IS CONVERGED

B2 axial	THK	AeroBl	Blades2
0.500	0.050	0.950	77.000

	R2	C2	Cu2	Cm2	Ao2	Mach2	Chord	AxChord	Rcircle
TIP	17.94	343.05	35.04	341.26	1112.98	0.31	2.05	1.78	7.43
MEAN	15.50	346.34	62.92	340.58	1113.71	0.31	2.13	1.86	5.75
HUB	12.59	365.32	132.51	340.44	1114.41	0.33	2.14	1.98	3.85

	U2	W2	Wu2	MachRel2	DelRCu	Eff2uC	Eff2incC	AvgREff	Ws1/W2
TIP	280.83	420.56	245.78	0.38	630.65	0.92	0.75		
MEAN	242.59	385.07	179.68	0.35	976.78	0.92	0.75	0.75	1.10
HUB	197.08	346.51	64.57	0.31	1669.72	0.92	0.75		

	Pt2	PR	Ps2	Tt2	TR	Ts2	TwetBulb2	RH
TIP	9.09	1.01	8.51	532.08	1.00	522.64	496.80	2.93
MEAN	9.13	1.01	8.54	532.95	1.00	523.33	497.22	2.87
HUB	9.21	1.02	8.56	534.69	1.01	523.99	498.07	2.81

	Alfa2	Beta FLO	Beta BLADE	Deviat	Slip F.	DiffFct	Solidity
TIP	5.86	35.76	31.50	4.26	0.93	0.04	1.40
MEAN	10.47	27.81	23.50	4.31	0.87	0.08	1.64
HUB	21.27	10.74	6.50	4.24	0.87	0.16	2.01

blockage3	Cor/U1	Cor/Incid	XBladeGap	Vane#
0.950	1.000	0.824	0.495	73.000

ROTOR-STATOR GAP EXIT: STATOR LEADING EDGE

R3m	C3	Cu3	Cm3	Ao3	Mach3	cp 2-3	Stat Ax Chd
15.2185	395.6109	64.0710	390.3882	1110.8925	0.3561	-0.2830	2.0437

Pt3	Ps3	Ts3	TwetBulb3	RH3	FloAlpha3	VaneAlpha3	Incid3
9.1283	8.3720	520.6870	497.4655	3.0862	9.3204	33.0000	23.6796

```
    STATOR / VANED DIFFUSER THROAT IS NOT CHOKED:
   RCG       Cth        Cuth       Cmth      Aoth         Machth     cp 2-Th     Stat Chord
   15.2185   408.8428    93.3596   398.0407  1109.9884     0.3683    -0.4403     2.1315

   BlockageTh  PtTh      PsTh      TsTh      TwetBulbTh  AreaTh      w2-Th     DiffFact4
    0.9500     9.0738     8.2725   519.8324   497.4118   410.5396     0.1106     0.0535

    VANED DIFFUSER EXIT:
   R4        C4          Cu4       Cm4       Ao4           Mach4      cp 3-4   Stator Gap
   14.7013   397.6245     0.0000   397.6245  1110.7661     0.3580    -0.1011     0.5109

   Blockage4   Ps4      Ts4       TwetBulb4    VaneAlpha4  Vane Thk4  w2-4OD     cp 2-4
    0.9500     8.2956   520.5580   497.3412     0.0000     0.0600     0.1449    -0.4021

    STAGE EXIT CONDITIONS, STAGE            5
    Eff4      Pt4         PR4      Tt2avg      Del T     Ns          Ns nondim
    0.2415     9.0531     1.0045   533.2441     2.7440   538.7312     4.1762

Del Enthalpy   Del_H/U^2    GHP      Reynolds#        SH
  17101.982       0.217      47.093  493841.344   0.609046E-03

Melt Ratio at Stator LE, Throat, TE
0.00000E+00 0.00000E+00 0.00000E+00
 trTOT =     1.0530   Tt4 =   533.2441   T1  =   506.4096

   OVERALL EXIT CONDITIONS; ALL           5   STAGES

  Del Enthalpy   GHP        MassFloS1cor   OPR        Efficiency  Rotor1Inc    TR      AxHubLen
    167231.45    460.4963     89.1486      1.1403      0.6953      5.5749      1.0530     37.3740
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14. ABSTRACT
The occurrence of ice accretion within commercial high bypass aircraft turbine engines has been reported under certain atmospheric conditions. Engine anomalies have taken place at high altitudes that were attributed to ice crystal ingestion, partially melting, and ice accretion on the compression system components. The result was one or more of the following anomalies: degraded engine performance, engine roll back, compressor surge and stall, and flameout of the combustor. The main focus of this research is the development of a computational tool that can estimate whether there is a risk of ice accretion by tracking key parameters through the compression system blade rows at all engine operating points within the flight trajectory. The tool has an engine system thermodynamic cycle code, coupled with a compressor flow analysis code, and an ice particle melt code that has the capability of determining the rate of sublimation, melting, and evaporation through the compressor blade rows. Assumptions are made to predict the complex physics involved in engine icing. Specifically, the code does not directly estimate ice accretion and does not have models for particle breakup or erosion. Two key parameters have been suggested as conditions that must be met at the same location for ice accretion to occur: the local wet-bulb temperature to be near freezing or below and the local melt ratio must be above 10 percent. These parameters were deduced from analyzing laboratory icing test data and are the criteria used to predict the possibility of ice accretion within an engine including the specific blade row where it could occur. Once the possibility of accretion is determined from these parameters, the degree of blockage due to ice accretion on the local stator vane can be estimated from an empirical model of ice growth rate and time spent at that operating point in the flight trajectory. The computational tool can be used to assess specific turbine engines to their susceptibility to ice accretion in an ice crystal environment.

15. SUBJECT TERMS
Flow simulation; Aeropropulsion; Engine icing; Aircraft turbine engine system simulation; Turbine engine; Compressor

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